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STEEL

For forty-eight Years—IRON TRADE REVIEW

PRODUCTION ◆ PROCESSING ◆ DISTRIBUTION ◆ USE

The Week In Steel

THUS far in the reconstruction era traffic has been entirely one-way; the government has brought in a veritable gusher of gold and credit and confidence at Washington; but the treasury, like an open-hearth furnace, has a charging as well as a tapping side. In about ten days, almost coincident with the filing of 1931 income tax returns, a revenue bill will appear in the house, posited largely upon a sales tax, apparently certain of passage. For the first time since the Civil war, steel may pay a direct tax on sales, probably 2 per cent of the value of its manufactured products (page 17). The committee assures that the tax will be assessed only once, but warns that nothing will escape.

Washington Giveth, Also Taketh Away

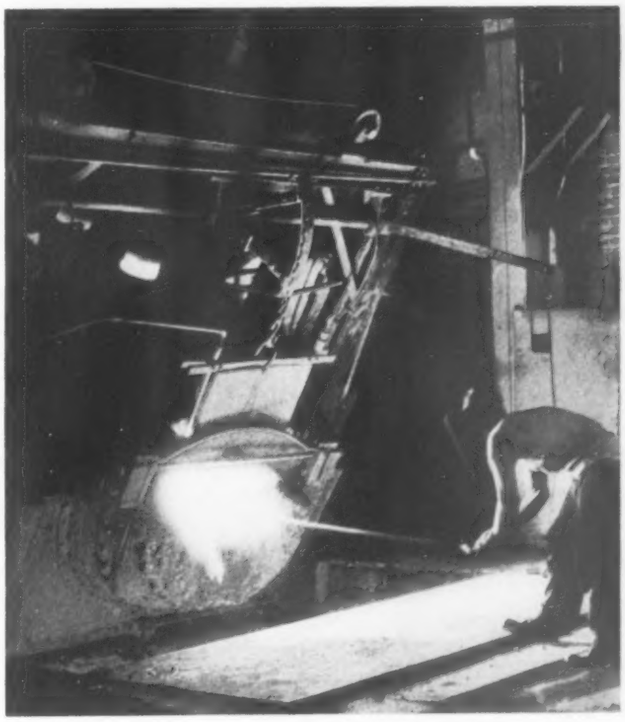
Nothing fazes congress, not even defining a "manufactured product". A member of the ways and means committee states that when a nonintegrated mill buys sheet bars the tax will apply only to the resulting sheets. But these sheets will be mingled with other materials, some thereto tax free, to form the manufactured product of another industry. And, where will the tax appear in price quotations? The committee unquestionably is writing a "best seller" . . . . Levying new taxes, however, will not rout depression, according to an eastern industrialist-economist (page 17) unless wages and commodity prices are adjusted and the federal budget is balanced.

Railroads, Building Take Lead in Demand

Grudgingly, the depression in steel is retreating. Prospective automobile requirements continue slow to mature, but structural steel projects have welled up to the largest volume in 60 days (page 49) and as they ease their financial situation by borrowing at Washington the railroads are buying. . . . February, like January, developed an increase in the number of active blast furnace stacks (page 23); this gain was entirely at merchant furnaces and pushed the daily rate of pig iron production up 5.7 per cent.

20,000,000 Tons Is Prize for Co-Operation

This improved situation dovetails with the opinions of two important steel executives (page 20), who make the public commitment that the industrial skies are clearing, with mergers and rising prices among the consequences. . . . . One apostle of more aggressive merchandising visualizes (page 21) a potential market of 20,000,000 tons annually for fabricated steel, to be unlocked by co-operative



"Making Bottom," that is, preparing the electric furnace for charging; a photographic study by Margaret Bourke-White for the Ludlum Steel Co., Watervliet, N. Y.

Slow motion motor, developed by Westinghouse Electric & Mfg. Co., "which should run forever" provided the current be not interrupted. Some parts are made of steel

research and promotion; and appraises sentiment better in the West than the East save for Chicago and St. Louis.

Favorable Trade Balance in Steel Narrows

If "rugged individualism" is the salvation of American industry, as the White House suggests, foreign trade statistics for January are less disturbing. So drastic was the decline in exports of iron and steel and so sharp the increase in imports that a favorable trade balance of 31,451 tons in December was whittled down to 9607 tons in January (page 22). Half of the January imports consisted of 10,697 tons of bars and shapes from Belgium, 5239 tons of pig iron from Holland. . . . The scrap trade may help right the ship, for when its institute meets this week in Washington (page 18) it may form an export corporation.

Japan Also Land of Rising Production

Second only to Canada as a consumer of American steel at this time is the Far East, but there is no trustworthy indication that war materiel is a stimulus. . . . Japan, largest buyer in the Far East, is diligent in building up her industry (page 31), from 1920 to 1930 having increased her production of pig iron 225 per cent and of steel 400 per cent. Only foreign iron ore, chiefly Manchurian, and foreign scrap have made this expansion possible. Strangely enough, for all her imitation of the Occident, Japan has not become alloy-minded. . . . Sheet piling is a product to which the Japanese government steel works, one third of the entire industry (page 21), is devoting more attention.

"Buy British" Amounts to Boycott

For extenuation of their foray at Shanghai the Japanese have pointed to the Chinese boycott of their goods. In the "Buy British" movement in England, coupled with the new 10 per cent tariff and abandonment of the gold standard, an American iron ore expert who recently viewed conditions abroad (page 19) sees the equivalent of a boycott. . . . Russia's industrial program, this observer reports, is slowing down because no nation can be immune to present world economic influences, but the Russians claim (page 20) progress in creating a steel industry. . . . Although the new tariff was effective March 1, British consumers of steel have stocked so much foreign material (page 73) domestic makers do not expect to benefit for some time.

Extinction Is Only Peace This Foe Knows

Corrosion is a silent, relentless foe of metals which, it is estimated, takes a toll of one billion dollars annually (page 20). One proposed remedy is the use of an inhibitor. . . . Galvanizing is one defense. Embrittlement of galvanized structural steel angles has been the subject of intensive research (page 35), establishing the fact it results in large measure from cold working, with pickling and galvanizing also guilty. . . . An eastern steelmaker has developed (page 37) wire screening unusually resistant to abrasive action. . . . Woven wire fencing, much of it galvanized to resist corrosion, accounts for the consumption (page 38) of 500,000 tons of steel annually.

Labor's Dollar Smaller but Goes Farther

While recognizing that increased employment is the only genuine relief, steel continues mindful of its labor. . . . A Colorado producer (page 20) is supplying free garden plots and seeds, a practice recently noted in Alabama. . . . General Electric beginning March 1 found it possible to halve its employes' contributions (page 20) to unemployment relief. . . . Living costs are reported 2 points less in January than in December (page 21), with the dollar worth 123 cents compared with 1923. . . . Virtually the first indication of resistance of labor to sharing in the readjustment comes (page 20) in organization activities of union machinists.

Try To Levy Sales Tax on Steel Only Once; Mill To Pay

WASHINGTON—A sales tax will be levied on iron and steel products for the first time since the Civil war under provisions of the revenue bill the house ways and means committee is drafting for introduction in the house about March 15.

Since treasury officials are favorable to the tax, it is expected that any differences over items to be included and the rate will be adjusted. It has been tentatively announced that the rate will be 2 per cent. It would be speedy action were the bill to be passed and the machinery for collection set up in 45 days after introduction.

The tax, it is stated, will be levied on "manufactured products." In an interview with STEEL, Representative Bacharach, of New Jersey, Republican member of the ways and means committee, states that the tax will be collected on the product when manufacture is completed. Thus, plates, shapes, bars, sheets, strip, pig iron, presumably would be considered "manufactured products."

Duplication Inevitable

Concerning the possibility of pyramiding the tax, this is regarded as inevitable in some cases. Presumably a plate would be regarded as the manufactured product of a plate mill, while a tank would be the finished product of a fabricator and also liable to the tax.

Asked specifically concerning the case of a nonintegrated sheet mill buying its sheet bars in the open market, compared with a company that is self-contained, Representative Bacharach said only one tax will be collected, and that will be on the finished sheet. If this is the policy, semifinished material will not be appraised as a manufactured product. A similar view would levy no tax on pig iron but collect it on castings.

But on these and other points, not only the wording of the bill will be necessary for a definite determination but the interpretation of the treasury department will also be important. There is no question, however, of the intent to collect the tax only once.

On plates, shapes and bars at the new official quotation of 1.60c, Pittsburgh, for the second quarter, the addition of a 2 per cent sales tax would put this price up to 1.632c. On the new official 2.90c price on galvanized sheets, the advance would be to 2.958c. It is expected that the tax wil be collected from the producer.

While administrative features of the bill have not been announced, it is possible that producers will be required to make sworn statements monthly to the treasury department, accompanied by the sum specified.

The objective of the sales tax is to raise $625,000,000 annually. The administration views the levy as "temporary"—that is, until the federal budget has been balanced, and the incidence of income, corporation and other so-called normal taxes are adequate. One estimate is that the new impost will be effective about 2 years.

In addition, the committee is expected to recommend increases in income and corporation taxes—probably not retroactive to 1931—and a consumers' tax on gas, oil and electricity. The latter taxes are to be between 5 and 10 per cent of billings to customers. Here, as with the sales tax, the integrated producer will fare best. The proposed 1 cent per gallon tax on gasoline will probably be superseded by inclusion of gasoline as a manufactured product, assessable at 2 per cent.

Depression To End When—

UNLESS a world war breaks out in the Far East the depression will end (1) when wages and commodity prices are adjusted, (2) when the United States has balanced its budget. So declares Alvan T. Simonds, of the Simonds Saw & Steel Co., Fitchburg, Mass., who with John G. Thompson publishes Looking Ahead. *Says Mr. Simonds, in part:*

"Wholesale prices, now at about 1913 levels must rise. This is almost impossible until wages in general are adjusted to meet the long reduction in commodity prices. A 10 per cent cut in wages will not be enough. Some wages have not been reduced at all, such as the wages of 4,500,000 public servants.

"The ability of the United States government to balance its budget has not as yet been demonstrated. If the United States is forced to borrow — and this is likely — it will have to be at an unusually high rate. It is quite certain that wholesale commodity prices are at or very near the bottom. We are not yet certain as to what may happen to bond prices and stock prices."

Sales Tax Helped Pay for Civil War

FROM Aug. 1, 1862, to July 14, 1870, a sales tax was imposed upon iron and steel along with other products to help pay for the Civil war and the ensuing reconstruction period—reconstruction being also applied to the present time.

The first sales tax bill was passed July 1, 1862, effective one month later. On June 30, 1864, and March 3, 1865, the tax was increased. On July 13, 1866, under President John-

THE DOME FLOATED INTO PLACE: The diameter of this 5,000,000-gallon steel water tank, erected in Lancaster, Pa., by the McClintic-Marshall Corp., using Bethlehem Steel Corp. plates and shapes, is 100 feet. The dome roof was fabricated on wooden pontoons inside the tank; the tank was filled with water, and the roof raised into position 91 feet above ground, where it was securely fastened

son, an entirely new act for the reconstruction period, reducing many rates, was enacted, followed by further restriction of the tax on March 2, 1867, and its final rescinding July 14, 1870.

At the outset, railroad iron was taxed $1.50 per ton; bands, hoops and sheets not thinner than No. 18 gage, $1.50; bands, hoops and sheets thinner than No. 18 gage and cut nails and spikes, $2; cast iron for bridges and buildings, $1; steel in ingots, bars, sheets or wire not less than ¼-inch thick, when valued at 7 cents per pound or less, $4; valued at 7 to 11 cents, $8; and valued over 11 cents, $10.

At the height of the tax, the three before-mentioned classifications of steel ingots, bars, sheets and wire were increased to $5, $10 and $12.50, respectively. Pig iron was made taxable at $2; rivets, $5; cast iron for bridges and buildings, $3; railroad iron, $3; wood screws, 10 per cent.

In the last year of its effectiveness the Civil war sales tax raised a grand total of $8,206,839; the sales tax now under consideration at Washington is designed to bring $625,000,000 annually into the treasury.

Especially in its latter days, the Civil war sales tax was under fire. James A. Garfield, later president, declared that the tax "ties a fetter upon every article that should have first freedom of exchange in every place." Sen. John Sherman objected to the tax in these terms: "It is a tax on industry, it is a tax on the most careful, the most prudent and the most energetic of our people, it is a license tax, a tax on employment, is a tax that requires espionage."

Will Substitute Regional Meetings for Convention

Chicago — Concrete Reinforcing Steel institute announces that in order to save many members the expense of making a trip to Atlanta, Ga., to attend the annual meeting of the institute, originally scheduled at the Atlanta Biltmore hotel for March 7-9, the directors have arranged instead for three one-day sectional meetings to be held in the South, East and Central West.

The program calls for a meeting at the Atlanta Biltmore hotel on Monday, March 7, the morning to be devoted to institute activities and the afternoon and evening to regional conferences. The eastern sectional meeting will be at Philadelphia, probably early in April, and the central sectional meeting at Chicago, probably the latter part of April. Later announcements will be made concerning the two latter meetings.

Scrap Convention To Discuss Export Corp., New Grading, Auto Scrapping,

FOURTH Anual Convention of the Institute of Scrap Iron and Steel Inc., New York, which will be held at the Mayflower hotel, Washington, March 8-10, will be noteworthy for the large number of outstanding national leaders and allied trade organizations which have been invited to participate.

Among guests will be Sen. Gerald P. Nye, of North Dakota; Secretary of Commerce Lamont, Charles Abbott, executive director, American Institute of Steel Construction; Luther Becker, chief, iron and steel division, department of commerce; Commissioner G. S. Ferguson of the federal trade commission; Miss Ellen L. Love, chief of the export trade section of the federal trade commission; Alexander Galt, bureau of standards; and Edward L. Bacher, manager, foreign commerce department, United States chamber of commerce.

Among organizations which will be represented at the convention are National Association of Purchasing Agents, American Railway association, National Automobile chamber of commerce, Gray Iron institute, Steel Founders' Society of America, and United States chamber of commerce.

The program includes a special conference on the development of foreign markets for scrap iron and steel, during which it is expected that a proposal will be made to organize a Scrap Export Corp. under the Webb-Pomerene law. The department of commerce also has arranged a conference for the purpose of considering revisions in the uniform scrap iron classifications adopted in 1926 at a conference called by the department.

The American Railway association will report back to the institute its action on recommendations made by the railroad scrap committee of the institute last October concerning the specifications, methods and terms of sale and award of railroad scrap.

The trade commission has granted a hearing to Benjamin Schwartz, director general, and the trade relations committee of the institute, on the exceptions which the institute has taken to changes proposed by the commission in the code of business practices of the institute.

The program for a national automobile scrapping plan proposed by the institute, in co-operation with the National Automobile chamber of commerce, will be further considered at a meeting of members of the institute who are interested in becoming part of the national chain of yards which is contemplated by this proposal.

President Hoover will receive the leaders of the institute at the White House, March 9 and it is expected conservation of natural resources will be discussed.

The Business Week In Washington

UNION labor won a long fight when the senate March 1 voted 75 to 5 in favor of the Norris bill declaring the right of labor to organize and asserting the so-called "yellow dog" contract to be contrary to public policy and unenforceable in federal courts. The bill now goes to the house.

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Senate manufactures committee has reported favorably on the Wagner bill to provide co-operation between federal and state governments in unemployment relief.

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The senate steering committee has agreed to take up the Democratic tariff bill, already passed by the house, curtailing powers of the tariff commission but not specifically revising any rates.

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Reconstruction Finance Corp. will issue $250,000,000 in debentures in 2 months, 10 per cent of which will be used for crop relief by the department of agriculture. Loans are being made by the corporation at 6 per cent.

Colorado Provides Gardens

Denver—About 500 employes of the Colorado Fuel & Iron Co. at its various mining properties intend raising their vegetables this summer, plots to be furnished by the company and seeds by the Thanksgiving fund.

Wheelbarrows Standardized

Washington — Acceptances to the simplified practice recommendation on wheelbarrows are sufficient to make it effective April 1, for one year, the department of commerce announces.

Russia Hit by World Crisis; Germans Fear Overinflation

THE economic situation in Russia today is evidence enough that no nation, however vast and varied may be its natural resources, is immune to the influence of financial and commercial conditions in the world at large," said R. C. Allen, president of the Lake Superior Iron Ore association and vice president of Oglebay, Norton & Co., Cleveland, who has recently returned from a European trip. Mr. Allen talks interestingly of existing conditions in Russia, Germany and England.

With respect to Russia, he says that the practical failure of the wheat crop in that country last year, the rise in the value of gold and the disorganization of world trading and finance, among other causes, have slowed down Russia's industrial program.

Depend Upon Exports

Russia remains peculiarly dependent on exports to other countries in order to obtain funds for purchases abroad of the machinery and equipment necessary to gain a foothold from which she may advance to the coveted position of comparative economic independence. For export she has oil, mineral, timber and some food products, but in these times of limited demand and collapsed prices, she finds it increasingly difficult to get forward.

In this we find the main reason for the exodus from Russia of foreign technicians, particularly Americans, whose services are by far the most expensive. However, Russia still offers an opportunity for employment of American technicians who are willing to work for roubles mainly, with limited payment in gold.

Mr. Allen said that he was informed in Berlin that there are at least 30,000 German engineers unemployed, and being willing to work for roubles, there is a movement of these men toward Russia in replacement of engineers of other countries, particularly Americans.

Although, as Mr. Allen says, there seems to be no hostility toward Americans generally in Russia, there is a strong feeling against political America because of the negative official attitude of our country toward resumption of diplomatic and commercial relations with Russia. Mr. Allen says that the Russian government has carried out all of the terms of its agreement with his own firm and has no criticisms to offer on that score.

In Germany, Mr. Allen says that the evidences of depression are sufficiently obvious to the casual visitor, that one feels the nervousness and apprehension existing among all classes of the people. Reparations payments by Germany are regarded as the main obstacle to early economic recovery.

It is said everywhere in Germany that the unyielding attitude of France endangers German political stability, sundering the parties of moderate opinion, supporting the present government and strengthening Communists on the one hand and the Hitlerites on the other.

Mr. Allen said that the German steel industry as a whole is running at about 25 per cent of capacity, and that this is a good index of industrial activity generally in Germany. One of the curious effects of the stress in Germany is the rapid spending of money by those who have it, including funds in savings accounts in the banks. In other words, the Germans just now would rather have goods than money, fearing that the mark will buy less tomorrow than it does today.

Mr. Allen says of England that the people generally are in cheerful mood; that the new tariffs and the lowered value of sterling have stimulated certain industries, including the steel industry, which is now running at higher capacity than our own; that there is general talk in London of pending currency inflation in the United States, the thought being that we will be forced to inflation in our own defense.

Mr. Allen says further that the "Buy British" movement is to be taken very seriously and already amounts to a practical boycott of foreign goods. This movement, together with present and prospective tariffs and the depreciated value of sterling, has made it practically impossible for countries on the gold standard such as ours to trade with England, and that these measures are designed to bring just that about.

Sees Cancellation Ahead

When asked his opinion concerning the liquidation of war debts, Mr. Allen disclaimed any special knowledge of that subject, but said that he believed that United States will not receive payments under established schedules, that the efforts of debtor nations to acquire gold for payments to us is a prime cause of the high value of gold, or, to put the matter in other words, the low value of commodities; that we and France are responsible for the collapse of the gold standard in Britain and many other countries; that already having gold in our hands and refusing to take goods, our debtors have no means of paying their obligations to us; that therefore our policy has settled the matter of debts in favor of the debtors.

When asked if he favors cancellation, Mr. Allen said that he regrets it but believes that we shall have to in our own interest.

Blank & Stoller

R. C. ALLEN: The president of the Lake Superior Iron Ore association, and vice president, Oglebay, Norton & Co., Lake Superior mine operators, Cleveland, in the accompanying article talks interestingly of conditions in Europe, where he recently made an extensive business trip. His firm has been acting in an advisory capacity to the Russian soviet on iron mine development

Steel Executives Are More Hopeful

FURTHER decline in steel prices is improbable and increases are not unlikely," states Tom M. Girdler, president, Republic Steel Corp., Cleveland, in his annual report. "Stocks of materials in hands of consumers are inadequate for business at an average rate. Consumption of steel products has been in excess of production for a considerable period, and necessity for additional production is approaching."

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Toward the end of March effects of reviving confidence, increasing automobile orders and the thoroughly liquidated state of all lines of business should be reflected in steel, according to E. T. Weir, chairman, National Steel Corp., Pittsburgh. He forecast a slow, orderly recovery, with the necessity for integration leading to mergers. As a force for improvement he cited the trend away from absentee management.

Machinists Reported In Organization Drive

Intensive organization efforts are being inaugurated by the International Association of Machinists and the metal trades department of the American Federation of Labor in Indianapolis, Detroit, Cincinnati, Dayton, O., and other cities, according to A. J. Allen, secretary, Indianapolis branch, National Metal Trades association.

"The dues-paying membership of the International Association of Machinists is said to be slightly less than 50,000," Mr. Allen states. "However, 10,000 additional members are receiving out-of-work stamps . . . rather than being dropped from membership after being three months in arrears."

A "siege of union agitation and strikes" is predicted with industrial recovery in the metal trades, when the demand for skilled mechanics "may bring about the same old conditions of 'pirating' in the employment of labor."

Steel Progress in Soviet Russia

DISCUSSION of failure of soviet plants to produce much more than half of their 1931 quotas of iron and steel (STEEL, Jan. 18, page 13) led to the charge in Moscow recently that some blast furnaces had been placed in charge of engineers only one year out of school, according to *The New York Times.*

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"Stankostroy," the large Soviet machine building plant in the Moscow district, planned to produce 6800 revolving turret lathes annually, was put in operation Dec. 25.

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Soviet Russia claims to be making progress in electric welding. The use of welding is said to have cut the construction time of a ship in the Kieff dockyard from four months to two months. Electric welding is much used in the production of frames for freight and passenger cars.

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Expansion of the old metallurgical plant Electrosteel, at Noguinsk, 60 miles from Moscow, is expected to be completed by the end of 1932, according to the U. S. S. R. chamber of commerce. Annual output will be increased to 120,000 tons of high-grade and alloy steel, the 1932 schedule calling for 45,000 tons. Total cost will be 90,000,000 rubles, or about $45,000,000.

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With its bent for condensation, Russia calls its organization for handling exports of machinery and equipment EXPORTMASHINA, for exporting coal SOYOUZUGLEEXPORT, for importing metallurgical equipment GOSMETAMASHIMPORT, for importing machine tools STANKOIMPORT, for importing ferrous and nonferrous materials TZVETMETIMPORT, for importing laboratory equipment TOCHFRIBORIMPORT.

General Electric Reduces Employe-Relief Quota

Since Nov. 1, 1931, employes of the General Electric Co., Schenectady, N. Y., have been contributing 2 per cent of their earnings for the relief of part-time unemployed workers of the company, but beginning March 1 the deduction will be reduced to 1 per cent.

March and April payments to employes will probably be greater than in the preceding months, but a surplus has been accumulated. General Electric employes since Nov. 1 have contributed $480,000 and the company a like sum. In the 10 months preceding Nov. 1 employes and the company each contributed $500,000.

Urges Search for Inhibitor To Curb Corrosion; Annual World Toll Is Billion

CORROSION of metals is taking a toll of more than $1,000,000,000 a year in the United States, of which the petroleum industry's share in 1931 was $125,000,000, equal to a levy of 1 cent on every gallon of gasoline consumed in the United States, Dr. Gustav Egloff, of the Universal Oil Products Co., Chicago, will state at the convention of the American Chemical society in New Orleans, March 28 to April 1.

Almost one-half the corrosion waste of the world occurs in the United States, and it represents over 1 per cent of the value of the nation's annual business.

This loss is in spite of widespread endeavors to develop a remedy, according to Dr. Egloff, who believes it should be possible to find rust inhibitors for iron and steel which may be incorporated in small amounts to obviate corrosion.

According to Dr. Egloff, the oil industry is exceptionally open to vast damage from corrosion. Before crude petroleum has been brought to the surface its water or brine content has corroded wells and pipe lines. Through oil casing and tubing, storage tanks, stills and cracking and treating equipment this damage continues.

Tanks, steel derricks, refinery buildings have their lives shortened by atmospheric corrosion, while tankers are the prey of marine deterioration. Alloy steels have been used with some success but the damage of corrosion continues, points out Dr. Egloff.

Financial News of Steel Industry

COLORADO FUEL & IRON CO., Denver and Pueblo, Colo., reports net loss of $3,363,206 after interest, depreciation and taxes in 1931. This compares with net profit of $298,648, equal after preferred dividends to 41 cents a share in 1930. During 1931 the company reported an operating loss of $576,044. Bonded interest of $1,626,530 and depreciation of $1,473,721 were added to the operating deficit.

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American Steel Foundries, Chicago, reports for year ended Dec. 31,

net loss of $791,374 after depreciation, taxes, etc., against net profit of $2,801,442, equal after preferred dividends to $2.37 a share in 1930. Company declared dividend of $1.75 a share on preferred, payable March 31 to record of March 15.

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Truscon Steel Co., Youngstown, O., reports net loss of $616,637 for 1931, against net profit of $1,200,531 during 1930.

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Midvale Co., Phildelphia, reports net income of $750,116 in 1931 after depreciation and federal taxes. This was equal to $3.75 a share, compared with net of $1,403,728, or $7.01 a share in 1930. Dividends paid during 1931 were at the regular rate and totaled $800,000. In addition $85,926 was charged off in plant facilities scrapped. After all charges including dividends the company reports net loss of $135,811 in 1931.

Lincoln Almost Ironmaster

Reference was made in the Feb. 22 issue of STEEL to the fact that George Washington escaped being an ironmaster because his father's iron mines descended to Laurence, elder brother of George; also, that the birthdays of Charles M. Schwab and James A. Farrell fall in February. William I. Parry, of the Pittsburgh office of the Carnegie Steel Co., calls attention to the fact that the ancestors of Abraham Lincoln were identified with the iron industry of eastern Pennsylvania, and that Lincoln might have been an ironmaster if his grandparents had not migrated west.

Japanese Consider Piling

Washington—Officials of the Japanese government steelworks have been considering whether the works should continue the effort to produce piling on a large scale. Increased demand from Manchuria and Korea was reported. Some delay has been encountered in rolling new sections, but further progress may be reported at the end of March, states *The Iron and Steel Fortnightly*, of the department of commerce.

Living Cost Off 2 Points

New York—Living costs of wage earners declined 2 per cent between December, 1931, and January, 1932, according to the index of the National Industrial Conference board. Compared with a year ago, total cost of living in January, 1932, had fallen 10.6 per cent. Food was off 17.7 per cent; rents, 10.2; clothing, 14.9; fuel and light, 3.1; sundries, 3.4. Compared with 1923, the dollar in January had a purchasing value of 122.9 cents.

Aggressive Selling Will Tap Large Market, Says Abbott

NEW YORK—A heavy potential reservoir of fabricated steel business exists for steel companies to tap by aggressive merchandising methods, was the assertion of Charles F. Abbott, director of the American Institute of Steel Construction, in an interview with STEEL upon his recent return from a 6-week trip throughout the country.

"Conservatively," he said, "there is a potential outlet for 20,000,000 tons of fabricated steel a year, which producers could develop if they would apply the same interest in co-operative research and promotion that they have devoted to production.

Charles F. Abbott

"Today there is a 'strained' capacity in this country of approximately 4,500,000 tons of fabricated steel with current consumption probably at the rate of 1,000,000 tons and normal consumption at 3,000,000 tons. How relatively little effort, considering potentialities, would be necessary in filling up the fabricating shops of this country, if only this effort were to be made and properly applied."

He enumerated various potential outlets, including steel roofing and steel flooring, government tests in connection with which have exceeded all expectations on the part of fabricators, but the promotion of which has been forced to lag because of the hesitancy of steel companies to expend at this time the relatively small amount of money required.

Machine bases, H-columns for pilings and various other items provide a considerable outlet. Road guards alone, if properly promoted, would consume conservatively 3,900,000 tons of steel, he added.

Continued failure to recognize the importance of co-operative effort along promotional lines might delay any material pickup in the structural industry for months, Mr. Abbott declared.

It is not only necessary, he added, that the fabricated steel industry (and he thought that it applied to all branches of the steel industry) develop new outlets, but also include in its promotional activities defensive measures to check inroads into its existing markets by competitive industries.

Mr. Abbott was encouraged by numerous instances of individual promotional initiative on the part of steel companies which he saw on his recent trip; nevertheless, a big overall job for fabricated steel remains.

Federal Work Leads

At present, federal construction continues to lead structural activity. He expressed doubt, however, as to whether present volume would be maintained for any great length of time in view of general plans for retrenchment. One of the most encouraging signs, from the standpoint of the steel industry as a whole, according to Mr. Abbott, was the absolute lack of stocks at any of the consuming plants that he visited.

In the South, there was quite a little construction in the textile industry, and several refrigeration projects are now developing in connection with the use of dry ice in shipping fruit. Around Mobile and New Orleans, there was an increase in steel barge construction in anticipation of the new inland water route in the South being open within the next two years.

The Hoover dam has stimulated no little activity in the Far West. Quite a little steel is now being let for the first time in connection with this project and there are some affiliated developments such as pipe line work, etc., which are now coming along.

Mr. Abbott believes that in the main, California has been relatively less affected by adverse business conditions than most other sections of the country. In the San Francisco district last year, a normal tonnage—72,000 tons of structural steel—rep-

(*Concluded on Page 76*)

Favorable Steel Trade Balance Nears Checkmate

FOR the first time in many years the favorable balance of trade of the United States in iron and steel is threatened. Such items as 10,697 tons of bars and shapes imported in January from Belgium and 5239 tons of pig iron from Holland ran imports up from 25,812 tons in December to 31,053 tons in January.

Meanwhile, states the iron and steel division, department of commerce, exports were declining from 57,263 tons in December to 40,660 tons in January. Thus, in January the favorable balance was reduced to 9607 tons, compared with 31,451 tons in December. In the past six months imports have remained fairly stationary, but exports have been easing off.

IMPORTS AND EXPORTS
Gross Tons

	1932		1931	
	Imports	Exports	Imports	Exports
Jan.	31,053	40,660	41,628	92,719
Feb.	.....	.....	28,045	91,161
March	.....	.....	40,402	109,324
April	.....	.....	47,872	101,434
May	.....	.....	37,176	95,046
June	.....	.....	37,819	75,577
July	.....	.....	37,190	84,465
Aug.	.....	.....	30,139	73,338
Sept.	.....	.....	30,966	69,778
Oct.	.....	.....	29,401	59,335
Nov.	.....	.....	34,658	59,556
Dec.	.....	.....	25,812	57,263
Total	.....	.....	421,108	968,996

Imports revised through March; exports revised through September.

The Far East led all other trade areas in point of tonnage of iron and steel products exported by the United States, 42.5 per cent of the January total going to these markets. Second place went to North and Central America with 35.7 per cent.

Despite the rise of the Far East as a market, Canada with a total of 10,129 tons remained the chief individual market for United States iron and steel, her total being made up in part of 1893 tons of black steel sheets, 1441 tons of scrap, 1201 tons of hoops, and 1056 tons of skelp.

Japan, the second market, received 9176 tons in all: scrap, 5324 tons, and tin plate 1201 tons, being the leading items.

Thirty-six of the 48 classes of products included in the export trade showed reduced tonnages in January, nine returned gains and there was one instance of duplicate shipments in

ORIGIN OF JANUARY IMPORTS
Gross Tons

	Steel ingots, blooms	Steel scrap	Cast iron pipe	Steel bars
Belgium	1,108	.....	2	2,463
Cuba	.....	91	.....	.....
Canada	.....	264	.....	23
Dom. Rep.	.....	56	.....	.....
Czechoslov.	.....	.....	.....	9
France	266	.....	8	131
Germany	87	.....	.....	1,060
Japan	.....	.....	1	.....
Sweden	44	.....	.....	93
Norway	.....	.....	.....	2
Uni. King.	6	.....	.....	30
Total	1,511	411	11	3,817

IMPORTS OF IRON AND STEEL PRODUCTS
Gross Tons

Item	Jan., 1932	Dec., 1931	Jan., 1931
Pig iron	9,369	1,039	11,141
Sponge iron	.....	.....	101
Ferromanganese, spiegeleisen*	1,559	917	3,676
Ferrochrome†	30	.....	.....
Ferrosilicon‡	8	8	270
Scrap	411	341	1,714
Ingots, blooms	1,511	2,301	2,253
Concrete bars	3,428	2,030	2,937
Hollow bar drill steel	53	51	78
Merch. steel bars	3,817	4,564	4,287
Iron slabs	.....	1	.....
Iron bars	18	33	109
Wire rods	986	662	584
Boiler, other plate	30	22	56
Sheets, skelp	260	235	1,167
Tin plate	50	16	21
Structural shapes	3,779	5,646	6,779
Sheet piling	.....	.....	.....
Rails, fastenings	182	285	299
Cast pipe, fittings	11	21	726
Welded pipe	404	407	279
Other pipe	202	159	1,584
Barbed wire	1,325	1,675	629
Round wire	147	118	174
Flat wire, strip	71	96	44
Wire rope	139	165	156
Other wire	84	24	60
Hoops and bands	2,034	4,348	1,559
Nails, tacks, staples	800	335	538
Bolts, nuts, rivets	18	5	141
Castings, forgings	171	60	125
Total	31,053	25,812	41,628

*Manganese content.
†Chromium content.
‡Silicon content.

DESTINATION OF JANUARY EXPORTS
Gross Tons

	Galv. steel sheets	Tin, terne plate	Black sheets	Steel bars
Argentina	.....	990	23	4
Brazil	28	172	8	1
Canada	62	74	1,893	443
Cent. Amer.	146	1	7	40
Chile	1	23	.....	.....
China	309	720	345	184
Columbia	170	14	65	12
Cuba	101	405	5	17
Dutch E. Ind.	49	.....	6	18
France	.....	.....	491	.....
Japan	.....	1,201	278	50
Java	.....	.....	.....	.....
Mexico	142	158	220	.....
Norway	32	.....	.....	6
Panama	42	.....	3	614
Philippines	1,451	265	13	80
Persia	.....	.....	.....	177
Peru	10	1	.....	2
Unit. King.	.....	11	1	60
Uruguay	.....	817	.....	.....
Venezuela	10	.....	.....	21
Total	2,605	5,311	3,390	1,769

ORIGIN OF JANUARY IMPORTS
Gross Tons

	Iron ore	Pig iron	Manganese	Ferromanganese
Brazil	.....	.....	5,564	.....
Brit. Ind.	.....	3,551	910	.....
Canada	38	.....	.....	910
Chile	45,276	.....	.....	.....
Cuba	22,000	.....	.....	.....
Italy	.....	.....	.....	91
Japan	.....	131	.....	.....
Netherlands	.....	5,239	.....	.....
Kwantung	.....	50	.....	.....
Mexico	115	.....	.....	.....
Norway	14,372	.....	.....	479
Sweden	.....	98	.....	.....
Sov. Russia	7,300	.....	7,292	.....
United King.	30	100	3,128	79
Total	89,131	9,369	16,894	1,559

EXPORTS OF IRON AND STEEL PRODUCTS
Gross Tons

Item	Jan., 1932	Dec., 1931	Jan., 1931
Pig iron	325	406	419
Ferromanganese, spiegeleisen	5	53	.....
Scrap	7,572	5,973	9,472
Ingots, blooms	160	92	600
Iron bars	30	30	44
Steel bars	1,769	2,605	3,922
Alloy steel bars	45	88	433
Wire rods	1,108	2,162	3,249
Boiler, other plate	1,045	1,216	2,106
Skelp	1,056	2,265	7,957
Iron sheets, galv.	139	235	717
Steel sheets, galv.	2,605	3,471	3,086
Steel sheets, black	3,390	6,324	8,641
Iron sheets, black	175	378	713
Hoops, bands, strip	1,863	1,616	3,448
Tin, terne plate	5,311	5,820	6,780
Shapes, not fabr.	792	4,368	9,334
Shapes, plates, fabr.	958	764	4,468
Metal lath	89	152	186
Frames, sashes, sheet piling	703	928	692
Rails	1,165	4,137	1,264
Rail fastenings	348	366	503
Boiler tubes	222	346	769
Casing, pipe, welded	1,115	1,008	4,177
Seamless black pipe, other than casing	62	.....	.....
Malleable - iron screwed pipe fittings	117	251	682
Cast screwed pipe fittings	73	80	425
Cast pressure pipe, fittings	200	726	883
Cast soil pipe, fittings	226	445	1,210
Welded black, galv. steel pipe	2,579	3,919	4,654
Welded black, galv. wrought pipe	75	366	721
Plain black or galv. wire	698	978	1,508
Barbed wire, fencing	1,478	1,630	2,767
Woven - wire screen cloth	42	47	65
Wire rope	155	180	248
Other wire	187	340	395
Wire nails	1,202	1,161	978
Tacks	32	81	37
Other nails	266	275	375
Bolts, nuts, rivets	225	284	505
Iron castings	140	230	397
Steel castings	98	64	433
Car wheels, axles	144	583	897
Forgings	478	306	790
Total	40,660	57,263	92,719

the two months. The largest gain was that in scrap, 1599 tons, while the outstanding reductions were those in plain structural shapes, 3576 tons; rails, 2972 tons; black steel sheets, 2934 tons; welded black and galvanized steel pipe, 1340 tons; and skelp, 1209 tons.

Avery To Stay at Chicago

Chicago—Sewell L. Avery, chairman of Montgomery Ward & Co. and the United States Gypsum Co. and director of the United States Steel Corp., March 4 also was elected president of Montgomery Ward & Co. Since it was stated that he intends to continue in active charge of this mail order house, it is assumed that this disposes of reports he might succeed James A. Farrell as president of the United States Steel Corp. April 18.

Honor General Electric Men

Four General Electric men are among the thirteen "most notable American inventors and scientists of inventive talents now living" who have been invited to the opening of the new patent office at Washington, April 11. These four are: Prof. Elihu Thomson, Dr. Willis R. Whitney, Dr. William D. Coolidge and Dr. Irving Langmuir. The others are: Orville Wright, Prof. Michael I. Pupin, Dr. Leo H. Baekeland, Nikola Tesla, Sen. Guglielmo Marconi, Dr. Frank B. Jewett, Gen. J. J. Carty, Charles F. Kettering and Dr. Charles L. Reese.

FEBRUARY IRON PRODUCTION

	No. in blast last day of month Feb.	Jan.	Total tonnage made Merchant	Nonmerchant
Ohio	15	15	13,979	215,224
Pennsylvania	17	16	30,012*	210,549*
Alabama	6	6	30,152	60,933
Illinois	7	6	54,296	58,703
New York	6	6	52,968	29,290
Colorado	1	1		
Indiana	5	5		
Maryland	2	2	7,250	134,524
Virginia	0	0		
Wisconsin	0	0		
Kentucky	1	0		
Massachusetts	0	0		
Tennessee	0	0	.....	40,586
Utah	1	1		
West Va.	1	1		
Michigan	2	2		
Minnesota	0	4	15,327	6,757
Missouri	0	0		
New Jersey	0	0		
Spiegel and ferro—all states	....	....	†	†
Total	64	61	203,984	756,566

*Includes spiegeleisen and ferromanganese. †Included in Pennsylvania.

Three More Furnaces In as February Iron Output Gains

PRODUCTION of coke pig iron in February registered its first increase in 10 months, or since April, 1931, and during the month three more blast furnaces became active, making a total of seven resuming since the first of the year. Stacks producing iron on the last day of the month numbered 64, compared with 61 on Jan. 31 and 57 on Dec. 31.

Average daily rate of production in February was 33,122 gross tons, a figure which was higher than the January rate of 31,336 tons by 1786 tons per day, or 5.7 per cent. The January rate, it is to be recalled, was the lowest since the 30,802-tons of August, 1921, and was only 3444 tons above the lowest rate of all-time—27,892 tons in July, 1921. The average daily rate for February, 1931, was 61,114 tons.

AVERAGE DAILY PRODUCTION

	1932	1931	1930	1929
Jan.	31,336	55,337	91,573	110,742
Feb.	33,122	61,114	101,640	114,942
Mar.	.....	65,448	104,930	119,662
Apr.	.....	66,986	106,371	122,106
May	.....	64,355	104,564	125,753
June	.....	54,599	97,817	123,837
July	.....	47,170	85,110	122,016
Aug.	.....	41,264	81,455	120,845
Sept.	.....	38,947	75,893	116,548
Oct.	.....	37,831	69,851	115,747
Nov.	.....	36,727	62,182	106,081
Dec.	.....	31,625	53,732	91,513
Ave.	32,199	50,035	86,141	115,808

Total output of iron in February was 960,550 gross tons, or a decrease of 10,887 tons, or 1.1 per cent, from the January total of 971,437 tons, this because February was a two-day shorter month than February. Except for the all-time low point of 864,642 tons in July, 1921, and the succeeding month with 954,901 tons, the February figure is believed to the lowest on record for modern times. The output for February, one year ago, was 1,711,192 tons.

Relating production to capacity, the rate of operation for February was 23.0 per cent, compared with 21.8 in January and 22.0 in December.

February was the second consecutive month to show gain in operating blast furnaces, January having been the first month to show improvement since March, 1931.

During the month, 8 furnaces were blown in and 5 were blown out or banked, the net gain being 3 units. Of the merchant class, 4 were blown in and 1 was blown out, with an increase of 3 for this class. Of the steelworks or nonmerchant class, 4 were blown in and 4 were removed from blast.

Blast furnaces resuming operation in February were: In Ohio: One Ohio, Carnegie Steel Co.; Hubbard No. 2, Youngstown Sheet & Tube Co. In Pennsylvania: Shenango No. 3, Shenango Furnace Co.; one Carrie, Carnegie Steel Co. In Alabama: Pioneer No. 1, Republic Steel Corp.; Woodward No. 2, Woodward Iron Co. In Kentucky: Ashland, American Rolling Mill Co. In Illinois: Joliet No. 4, Illinois Steel Co.

Furnaces blowing out or banking during the month were: In Ohio: Haselton No. 3, Republic Steel Corp.; Jisco, Jackson Iron & Steel Co. In Pennsylvania: Cambria H, Bethlehem Steel Co. In Alabama: Ensley Nos. 4 and 6, Tennessee Coal, Iron & Railroad Co.

MONTHLY PRODUCTION

	1932	1931	1930
Jan.	971,437	1,715,443	2,838,751
Feb.	960,550	1,711,192	2,845,937
Mar.	.....	2,028,906	3,252,822
April	.....	2,009,582	3,191,119
May	.....	1,995,001	3,241,477
June	.....	1,637,998	2,934,508
July	.....	1,462,270	2,638,441
Aug.	.....	1,279,205	2,525,105
Sept.	.....	1,168,436	2,276,781
Oct.	.....	1,172,781	2,165,374
Nov.	.....	1,101,820	1,865,458
Dec.	.....	980,377	1,665,715
Total	1,931,987	18,263,011	31,441,488

RATE OF OPERATION
(Relation of Production to Capacity)

	1932[1]	1931[2]	1930[2]	1929[3]
January	21.8	38.4	65.0	79.0
February	23.0	42.5	72.1	82.2
March	.....	45.4	74.5	85.5
April	.....	46.5	75.4	87.4
May	.....	44.7	74.2	89.8
June	.....	37.9	69.3	88.5
July	.....	32.7	60.3	87.2
August	.....	28.7	57.8	86.4
September	.....	27.0	53.8	83.3
October	.....	26.3	49.6	82.6
November	.....	25.5	44.1	75.8
December	.....	22.0	38.1	65.5

[1]Based on capacity of 52,515,875 tons Dec. 31, 1930; [2]on capacity of 51,490,680 tons; [3]on capacity of 51,069,895 tons. Capacities by American Iron and Steel institute.

Award Air Steel Needs

Washington — Goodyear-Zeppelin Corp., Akron, O., has been awarded the contract for an airship car, believed to require considerable corrosion-resistant steel, at $37,574.

Treadwell Engineering Co., Easton, Pa., has been awarded a contract for masthead mooring equipment, for Lakehurst, N. J., at $5100.

Industrial Men in the Day's News

E. E. Griest, President, Malleable Iron Research Institute, Cleveland

HE has been identified with railroading for the past 32 years and is now vice president of Chicago Railway Equipment Co.

AT the age of 18 his first job was with the Pennsylvania railroad; later, for a short time he was with Crucible Steel Co. of America.

IDENTIFIED with Chicago Railway Equipment Co. since 1918, his rise has been a steady one. He has written numerous technical papers.

E. E. GRIEST, recently elected president of the Malleable Iron Research institute, Cleveland, is vice president in charge of manufacturing for the Chicago Railway Equipment Co., Chicago. The latter company includes the Franklin Steel Works, Franklin, Pa., Marion Malleable Iron Works, Marion, Ind., and the Grand Rapids Malleable Iron Works, Grand Rapids, Mich.

Mr. Griest was born in Zanesville, O., in 1882 and his first job was as a machinist apprentice from 1900 to 1904 for the Pennsylvania railroad on its Columbus, O., division. In 1904 he left the railroad to enter Purdue university, Lafayette, Ind., for a course in mechanical engineering.

After graduation in 1907 he became a designing engineer for the Crucible Steel Co. of America, Pittsburgh, but in October of the same year he was made machine shop foreman for the Erie railroad at its Hornell, N. Y., shops.

He returned to the Pennsylvania railroad in 1908 and was appointed assistant general foreman for the company at its Fort Wayne, Ind., shops, later being appointed assistant master mechanic and in 1915, master mechanic.

Three years later he went to Chicago to become affiliated with the Chicago Railway Equipment Co. as assistant general superintendent. Shortly after joining the company he was sent to Detroit to the company's forging plant, where he was put in charge of the 155 millimeter shells that were then being produced there.

In 1919 he was promoted to general superintendent of the Chicago Railway company, a capacity in which he served until June 15, 1931, when he was made vice president in charge of manufacturing.

Mr. Griest is a member of the American Foundrymen's association, American Society of Mechanical Engineers, American Society for Testing Materials, Western Society of Engineers, Western Railway club and the Chicago Foundrymen's club. He has contributed many papers to the technical press and engineering societies.

E. HARTWELL II has been appointed manager of the warehouse at Denver for Colorado Fuel & Iron Co., Denver and Pueblo, Colo., succeeding A. R. Thompson. Mr. Hartwell, son of E. E. Hartwell II, formerly assistant manager of the sales department, has been with the company 11 years.

□ □ □

R. F. Mosedale has been appointed representative in northwestern Pennsylvania and western New York for Geometric Stamping Co., Cleveland. He will establish headquarters at 233 Jackson Building, Buffalo.

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Prof Henry Louis, secretary of the North England Institute of Mining and Mechanical Engineers and formerly head of the department of ming at Armstrong college, Newcastle, England, has been awarded the Bessemer gold medal of the Iron and Steel institute, of England.

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Arthur Roeder, president, Colorado Fuel & Iron Co., Denver and Pueblo, Colo., has been elected a director of the American Iron and Steel Institute, New York.

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James D. Cunningham, president of the Republic Flow Meters Co., Chicago, and a former president of the Illinois Manufacturers' association, has accepted the chairmanship of the development committee of Armour Institute of Technology, Chicago. A development program calls for expansion of the institute on the basis of a survey of engineering educational needs of Chicago.

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Sewell L. Avery, president of the United States Gypsum Co., Chicago, and a director of the United States Steel Corp., New York, has been elected a director of the Commonwealth, Edison Co., Chicago.

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Edward F. Berry, formerly with

(Concluded on Page 76)

(Obituary notices and additional personals will be found on Pages 76 and 78).

MIRRORS of MOTORDOM

DETROIT

FORECASTING the date of the public debut of the new Ford four and eight enters the list of hazardous occupations. At some assembly plants a few new models were displayed privately to dealers late last week, it is reported, and the middle of this week is the latest speculation for the showing of a sample car by dealers in some "key" cities.

But only the two general statements by Mr. Ford himself have broken the official silence. It is believed that assembly of the new V-eight motor attained the proportions of about 50 daily by the end of last week. The March schedule is said to be a total of 20,000 units of both the four and the eight.

While the unsettled condition at the Rouge plant, which bears much resemblance to the confusion just prior to the introduction of Model A in 1927, makes 20,000 units appear to be a larger order for March, this checks with releases to many parts makers. Up to the end of last week no tonnage lots of sheets, strip and other steel products had been placed, although small pickup business was being distributed.

Ford Details His Needs

Mr. Ford has denied the various reports of a new plan of financing Ford dealers and retail sales. He also has stated that "before long" he expects to be assembling 5000 to 6000 units daily, and to be buying $47,000,000 worth of steel and $140,000,000 worth of bodies in the open market, though not specifying the period over which these would be spread.

In addition to these expenditures, Mr. Ford places a value of $16,500,000 on the steel and of $60,000,000 on bodies he will make in his own plants. For malleable castings he estimates an expenditure of $5,044,000 and of gray iron castings $4,680,000. It will be recalled that when Model A was introduced, malleable castings were almost wholly omitted, but they were restored, when a malleable rear axle housing was substituted for the all-steel welded one.

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An undertone of greater activity is to be sensed in Detroit even if automobile production, considering the industry as a whole, is easing off slightly. The disappointment of two consecutive weeks has not dimmed the expectation that the new Fords will be out any day and that Detroit employment will show steady improvement.

Seeks Cheap Steel

Plymouth is at work on its model changes, believed to be chiefly in the bodies. The report is persistent that Fisher Body has recalled many die makers and that some of the important General Motors lines will be revised radically, departing from the conservatism which marks most of the General Motors units. Chevrolet continues to curtail its assemblies and through its part suppliers defer shipping dates on steel.

Chrysler last week did not sustain its improved demand for steel. From inquiries broadcast to mills and warehouses for seconds, this manufacturer appears extremely solicitous to obtain low-price steel.

Considering all lines, Chrysler production declined last week, with the possible exception of Plymouth, which assembled 145 new models daily, 4 days. Dodge at 200 units daily, 5 days, sustained losses in its passenger car assemblies. Chrysler proper is down to about 200 units daily, 4 days. DeSoto is turning out 375 cars daily, 4 days. Thus Chrysler total output is about 4000 units weekly.

The spread between the 4000 units of Chrysler and 15,000 of all General Motors lines is largely due to Chevrolet, despite its curtailment. Fisher Body at Cleveland is on a slower schedule. Chevrolet assembling has wavered between 3½ and 4 days a week. Recently the Chevrole t office force dropped back from a 6 to a 5-day week.

Oldsmobile experienced better sales in deliveries and sales in February than January and is assembling 250 units daily, 3 days a week, Cadillac-LaSalle continues at about 100 units daily, 5 days a week, half of this number being LaSalles.

◆

Hudson-Essex production is holding at about 1750 units weekly. Hupp, on a 5-day week, is at 350 units weekly. Graham has lengthened its work week from 4 days to 5, averaging 125 cars a day.

Packard, whose weekly production has been holding at close to 500 units, is anither producer whose February showing better that of January. In practically all departments it is now on a 5-day week.

Reo, which like Plymouth is reported nearing a change in its models, is assembling about 450 units weekly, being on a 5-day week.

Lake Season Opens

Weekly production rates of other manufacturers are: Auburn-Cord, 550; Franklin, 125; Lincoln, 150; Marmon., 275; Pontiac, 1900; Studebaker, 1500; Rockne, 875; Willys-Overland, 2100.

In all there were 27 motor companies making automobiles last week. . . . Olds Motor Works has a new president. . . . The steamer FELLOWCRAFT came from Detroit to Cleveland March 1, thus setting a precedent for earliness in lake shipping. Steel was taken to Detroit.

EDITORIAL

What Credit Means to Steel Industry

JOHN JONES has had two reductions in salary, but considers himself lucky to have a job. He spends money cautiously. The family car is six years old. He would like to buy a new one, but he hesitates to do so because he is not certain that his job is secure.

* * *

James Smith has always enjoyed a good income. Today he has $1000 in a checking account and $15,000 in a safety deposit vault. The latter represents all the cash he could lay his hands on after one of the two banks holding his deposits had crashed. Until he is convinced that money deposited in banks is safe, he will be reluctant to give up the sequestered cash.

* * *

A. B. C. Laundry Co. has 250 delivery trucks. They are old and have suffered severe punishment. The management wants to replace them, but hesitates to do so because it is not sure the laundry business has touched bottom.

* * *

Fear of Future Commitments Is Holding Back Business

X. Y. Z. Mfg. Co. needs a bending brake, several punch presses and a few machine tools to put its production facilities in apple-pie order. The president would like to buy this equipment but is reluctant to do so. First, his bankers advise against it and, second, he is hard pressed for cash for operations and hesitates to dig heavily into surplus or to incur added indebtedness for fear he may need all of his resources in securities or credit for future operations.

* * *

J. K. L. railroad has posted a "slow" order over several stretches of its main line, warning enginemen not to exceed 30 miles per hour. This nuisance could be avoided by the purchase of rails and splice bars but the railroad officials have not dared to authorize the expenditure because the road's credit is extended to the limit.

* * *

In the attitudes of John Jones, James Smith and the presidents of the A. B. C., X. Y. Z. and J. K. L. companies we have a vivid explanation of why the steel industry has been operating at 25 per cent of capacity. Needed purchases are being held in abeyance and money is being kept in idleness because of fear.

What will remove this fear?

Last summer it would have been difficult to give a ready answer. At that time the path to the return of public confidence was strewn with so many obstacles that it was impossible to sort out the significant from the imaginary. During recent months many of the factors which had seemed important have been swept aside as irrelevant. Today it seems clearer than ever before that the key log in the jam that is holding back business is credit.

How Will Effect of Remedial Measures Work Back to Steel Demand?

Assuming that this is true, we should be interested in studying how the present efforts to correct the credit situation will affect our respective businesses. We can do this by judging the probable influence of the Reconstruction Finance Corp., Glass-Steagall bill and similar agencies on each of the five typical cases outlined at the beginning of this discussion.

The J. K. L. railroad can apply to the R. F. C. for funds. If its affairs are not too involved and if the I. C. C. approves, it will be granted a loan. Several railroads already have been given temporary relief through this method.

Bank failures were largely responsible for the increase in hoarding during the last half of 1931 and in January of 1932. Thanks to remedial measures, this situation is clearing. Bank failures in February were only one-third as prevalent as in January or in December. A continuance of this improvement will tempt James Smith to give up his hoarded $15,000.

When money comes out of hiding and when bankers no longer feel it is necessary to keep their assets in such a high state of liquidity currency will flow more freely. Bills will be paid more promptly. X. Y. Z. Mfg. Co. collections will be easier. Its president will not be pressed so hard to find cash for operations. In time he will be able to finance the new equipment.

And when that time comes John Jones' job will be more secure, and he may be encouraged to buy the coveted car. A. B. C. Laundry Co. customers will return and the company will feel safe in buying the needed 250 trucks.

Only by such gradual penetration of life-giving credit into the blood stream of business can industry be restored to its normal stride. The present rate of progress is encouraging, but the steel industry must be patient.

THE BUSINESS TREND

Business Sees Hope in Easing of Credit

NEW signs pointing to continued improvement in the financial situation are encouraging. For the first time since it started functioning, there is tangible evidence that the activities of the Reconstruction Finance Corp. are bearing fruit. The number of bank failures has dropped sharply. Observers all along the financial front are breathing easier in the conviction that the attack against unnecessary liquidation is gaining momentum.

At this writing the improvement in credit has not been reflected in business conditions to any appreciable extent. Funds made available to the railroads by the R. F. C. have not yet resulted in concerted purchasing of needed supplies or equipment. Here and there, however, one sees sporadic awarding of contracts on projects long held in abeyance. It may be assumed that the release of this work is connected in some way with the relief—actually received or anticipated—from the federal credit body.

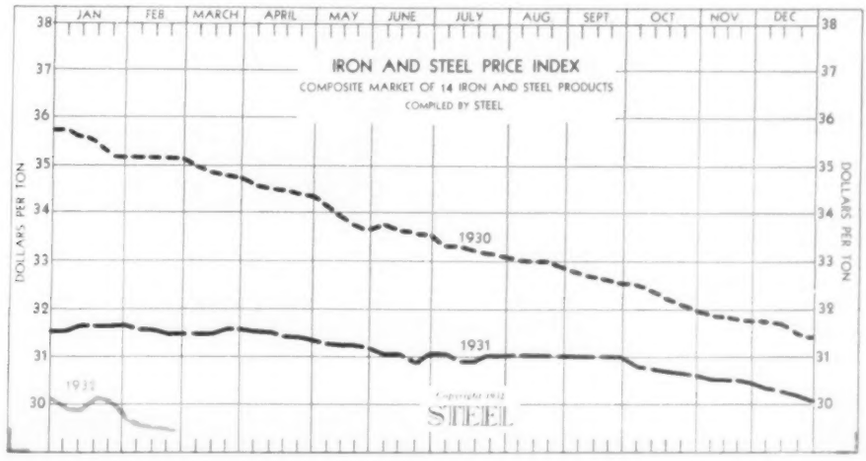
The week-to-week changes in industrial activity are almost negligible. After declining into a state of uncertainty for several weeks, the trend of steelworks operations again is pointed upward, but at a very slight gradient. Car loadings in the third week of February increased somewhat more than was anticipated. The daily average pig iron production in February showed a moderate gain over that of the preceding month, but steel ingot output declined. This is a reversal of the showing in January, when ingot output gained and pig iron tonnage dropped.

During the next few weeks interest will be centered upon the outcome of the widely heralded plans of Henry Ford. Interviews released by him point to the resumption of activities on a pretentious scale. Expected purchases of steel have not yet materialized, although suppliers believe some commitments will be made this week.

Present Signs Point to Moderate Upturn Before End of March

Commodity prices continue to fluctuate within a narrow range. A few of the week-to-week barometers have registered fractional gains, but the monthly indexes probably will show another decline in February. Prices of iron and steel still are uncertain owing to the fact they are not yet facing the acid test of moderate demand.

The distinctly brighter prospect in financial circles and the signs of impending increased activity in several steel consuming industries lend strength to the belief that steel demand will improve slightly before the end of March.



1932	
Feb. 27	$29.53
Feb. 20	29.53
Feb. 13	29.57
Feb. 6	29.60
Jan. 30	29.60
Jan. 23	30.00

1931	
Feb. 25	$31.61
Feb. 18	31.61
Feb. 11	31.69
Feb. 4	31.69
Jan. 28	31.73
Jan. 21	31.73

Jan., 1932	123,075
Dec., 1931	123,973
Jan., 1931	178,344

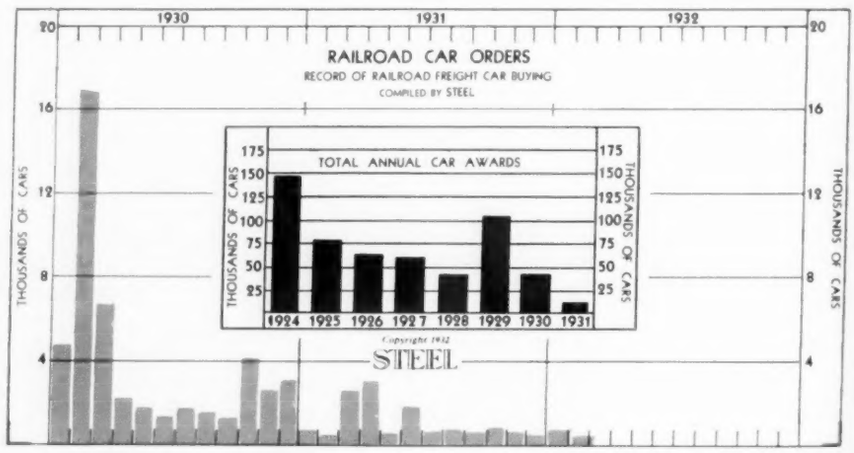
Automobile Output Fails To Come Up to January Estimate

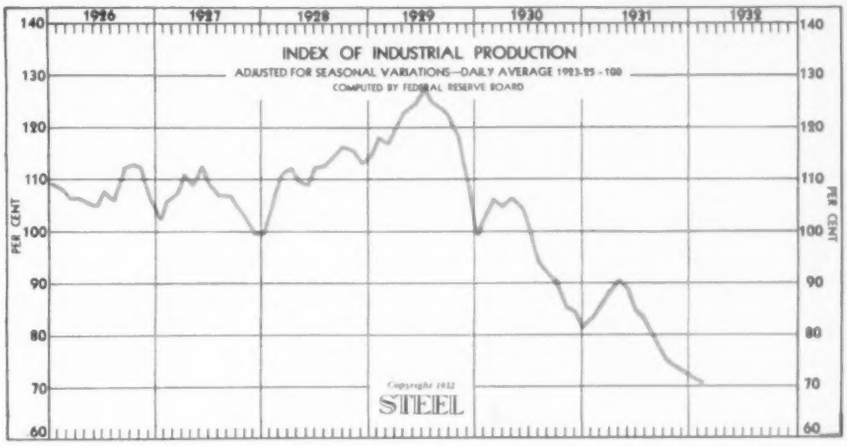
The chart on automobile output is repeated again this week, inasmuch as the report of the department of commerce yielded a figure sharply below the estimate issued by the National Automobile Chamber of Commerce. Instead of the estimated 126,500 units, January output in the United States and Canada totaled only 123,075, a slight decline from the 123,973 cars turned out in December. The revised total for 1931 is 2,472,359, which compares with 3,510,178 in 1930 and 5,648,715 units in 1929. Output for February has been estimated at from 135,000 to 140,000 cars. The outlook for March will be governed largely by the speed with which Ford activities get under way.

Orders for Freight Cars Remain at Low Level in February

Awards for domestic freight cars in February totaled 35, a drop of 124 cars from the January figure, and 15 under the total for February last year. Awards in February, 1930, totaled 17,027 cars which was the high point of that year, and for the same period of 1929 awards totaled nearly 16,000 cars. This disappointing volume, during the past few months, is in keeping with the policy of strict economy forced upon railroads by their serious financial position and volume purchases of expensive rolling stock undoubtedly will be delayed for a considerable period, particularly since available equipment in good condition now is widely in excess of restricted traffic requirements.

	1932	1931
Feb.	35	50
Jan.	159	100
	1931	**1930**
Dec.	11	2,729
Nov.	35	2,621
Oct.	780	4,116
Sept.	503	576
Aug.	1,104	1,111





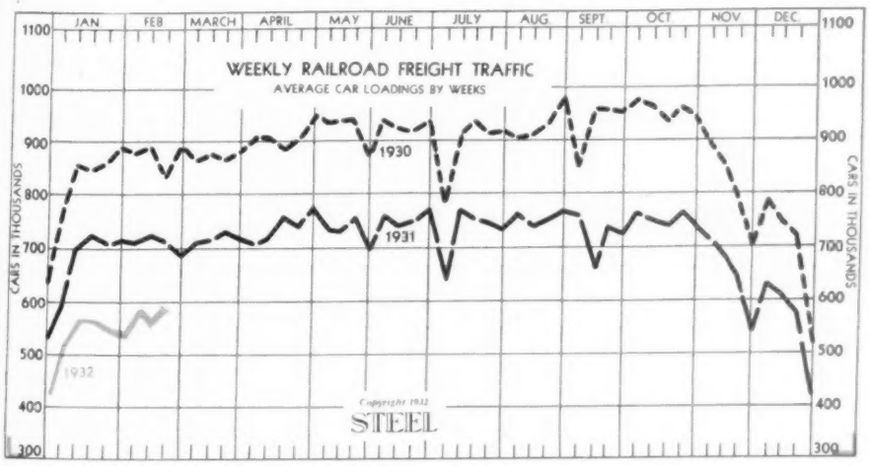
Jan., 1932	70
Dec., 1931	71
Jan., 1931	82

Index of Industrial Production Continues Downward Trend

The Federal Reserve board's index of industrial production continued to lose ground in January. It was down one point to 70 from the revised index for December. A year ago a gain from 81 to 82 took place and two years ago there was a gain of five points from 98 to 103. Among the component parts of the index, manufactures remained steady at 69 with adjustment for seasonable variation. Building construction dropped from 38 to 33 in value of contracts awarded. In the manufacturing group iron and steel moved up one point from 38 to 39, textiles from 85 to 89, leather and shoes from 81 to 82, while automobiles dropped 21 points.

Freight Traffic Expands Moderately in Third Week of February

Loadings of revenue freight for the week ending Feb. 20 totaled 572,606 cars according to reports from the car service division of the American Railway association. This is a gain of 10,141 cars over the preceding week, and a loss of nearly 150,000 cars below the same period of 1931. In the same week of 1930 loadings totaled 827,560 cars. Loadings of revenue freight for the seven weeks of 1932 totaled 3,979,702 cars compared with 5,026,109 cars for the same period of 1931 and 6,077,198 cars for the first seven weeks of 1930. Thus far in 1932 freight car loadings have shown no tendency to vary from the 560,000 to 575,000-unit week.



	1932	1931
Feb. 20	572,606	713,156
Feb. 13	562,465	720,689
Feb. 6	574,756	719,053
Jan. 30	561,157	719,397
Jan. 23	562,938	715,454
Jan. 16	573,276	691,753

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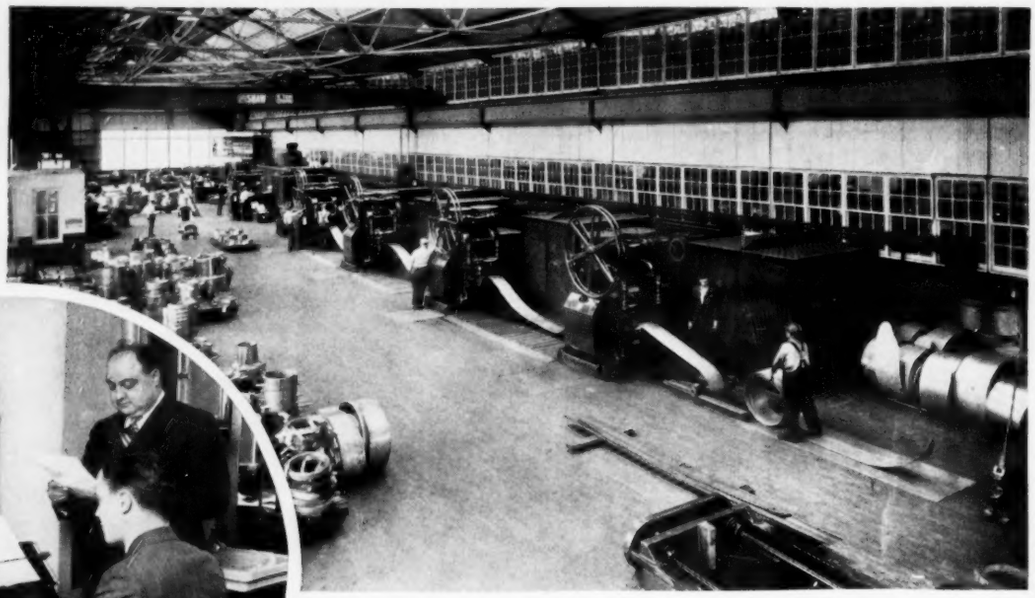

The Strip Mill, Huntington

Messages typed on this Teletypewriter in the New York office are instantly reproduced in identical typewritten form at the factory, Huntington, West Virginia.

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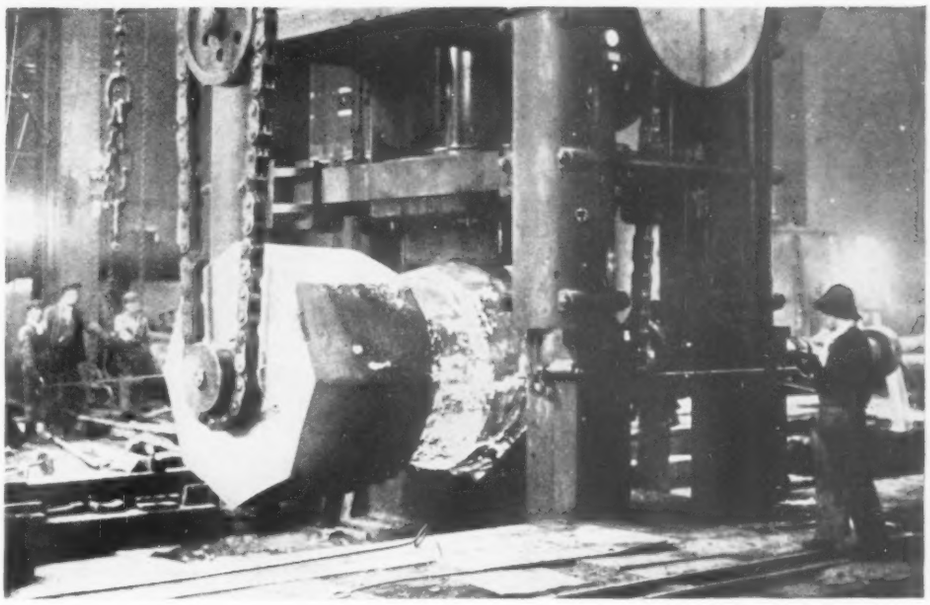
TELETYPEWRITER SERVICE



SHAPING a large ingot in a 4000-ton hydraulic press at the plant of the Seitetsujo or Imperial Steel Works, a government-operated mill and the largest in Japan. This mill, located at Yawata, on the island of Kyushu, was established by imperial edict in 1896

Courtesy, Consulate General of Japan

Japanese Iron and Steel Industry

BY JAMES A. RABBITT

International Nickel Co. Inc.

LACK of mineral resources in Japan has been accepted as a standing challenge to that country's industrial growth. As a result, it has been predicted that Japan could not succeed in the production of iron and steel sufficient to meet the demands of its ever-increasing industries. Notwithstanding this, Japan increased its production of pig iron 225 per cent and steel about 400 per cent between 1920 and 1930. In the latter year, steel aggregated 2,225,900 metric tons. Imports of steel, which amounted to 1,154,402 tons in 1924, were reduced to 371,706 tons in 1930, while exports had risen to nearly 100,000 tons. Certainly this is a creditable performance, indicating a trend toward Japan's future progress in steel.

The total production value of all Japanese industries in 1929 and the total production value of industries in the United States during the same year were in the ratio of 1 to 20. The comparative production value of pig iron during the same period was 1 to 21 and of steel, 1 to 23.6. This indicates that, compared with the United States, Japan's production of iron and steel had advanced proportionately with the country's progress along general industrial lines.

Lack of a liberal supply of coking coal and iron ore at one time was considered to be an insurmountable obstacle to the growth of Japan's steel business. This handicap has been removed by the development of deposits in the colonies and obtaining control by purchase of an ample supply of good ore from China and the Malay States. This arrangement has enabled the Japanese to adopt a policy of conservation of their meager domestic resources. Consequently, the domestic production of iron

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JAPAN holds a prominent position in today's headlines, and behind the activities of this little-known Oriental power lies an amazing story of industrial progress. A picture of progress in production of iron and steel in Japan is presented in the accompanying article by James A. Rabbitt, consulting engineer, International Nickel Co. Inc., New York, who has spent much time in Japan since 1918, both as commercial attache to the American Embassy at Tokyo and as consultant. Prior to the World war Mr. Rabbitt spent 15 years in Japan in engineering work, while during the war he served as special assistant to the state department and war trade attache for this country in Tokyo. He is now on his way to Japan to continue a survey of industries there for the International Nickel Co.

Japanese Production and Consumption of Iron

Gross Tons of 2240 Pounds

Year	Domestic Pig Iron Production: Government	Private Works	Total	Imports of Pig Iron	Total Pig Iron Consumption	Imports of Scrap Iron	Total Iron Consumption
1920	239,167	263,159	502,326	345,882	848,208	39,675	887,883
1921	302,810	200,957	503,767	225,289	729,066	9,349	738,415
1922	394,489	209,257	603,746	325,373	929,119	53,141	982,260
1923	433,922	339,547	773,469	343,246	1,116,715	51,948	1,168,663
1924	417,832	382,057	799,889	429,508	1,229,397	41,746	1,271,143
1925	450,075	448,920	898,995	313,853	1,111,848	43,437	1,155,285
1926	524,482	570,688	1,095,070	396,433	1,491,503	79,277	1,570,780
1927	532,026	706,057	1,238,083	469,193	1,707,276	226,391	1,933,667
1928	640,287	843,771	1,484,058	564,696	2,040,754	364,292	2,305,046
1929	636,049	854,314	1,490,363	647,379	2,137,742	492,555	2,630,297
1930	640,097	989,888	1,629,985	402,608	2,032,593	485,000	2,517,593
Increase or Decrease 1920—1930, Tons	+410,930	+726,729	+1,127,659	+56,726	+1,184,385	+445,325	+1,629,710
Increase or Decrease 1920—1930, Per Cent	+171	+276	+225	+16.5	+139	+1142	+185

1920 United States Pig Iron Production = 31,015,364 Tons
1927 United States Pig Iron Production = 35,858,232 Tons
Increase = 15.6 Per Cent = 4,842,868 Tons

ore has been less than 10 per cent of the imports.

Iron ore reserves in Japan proper have been estimated variously at between 40,000,000 and 80,000,000 tons; and for Korea, at about 20,000,000 to 30,000,000 tons. The workable deposits may be taken at the lower figures given. The supply is about 50 per cent magnetite, 25 per cent hematite and the balance limonite; iron content runs as low as 45 per cent and as high as 63 per cent. The supply of iron sand in Japan has been estimated to be about 150,000,000 tons, ranging between 30 and 50 per cent iron, mostly under 40 per cent. Up to the present, however, this has not been reduced to pig iron economically.

Manchuria in Key Position

The economic importance of Manchuria to the industries of Japan is vital in connection with the iron supply. (STEEL, Feb. 8, page 19) The South Manchurian ore reserves are estimated to be from 300 to 750 million tons, but only about 5,000,000 tons have been proved. This consists largely of low-grade ore of approximately 35 per cent iron high in silica, but it is adjacent to large deposits of good coking coal which permits the production of pig iron almost at the mine site.

The Japanese government's production of pig iron and steel is equal to approximately one-third of the total production of the country. With government leadership, the country has made a strenuous effort to become self-sufficient in its steel supply and consequently by tariff protection and subsidies, the steel industry gradually is reducing imports which at present amount to only one-tenth of the nation's requirements. It is obvious, however, that only by heavy government subsidies can private works produce such a great variety of shapes and sizes as is required by the Japanese market on a comparatively small scale.

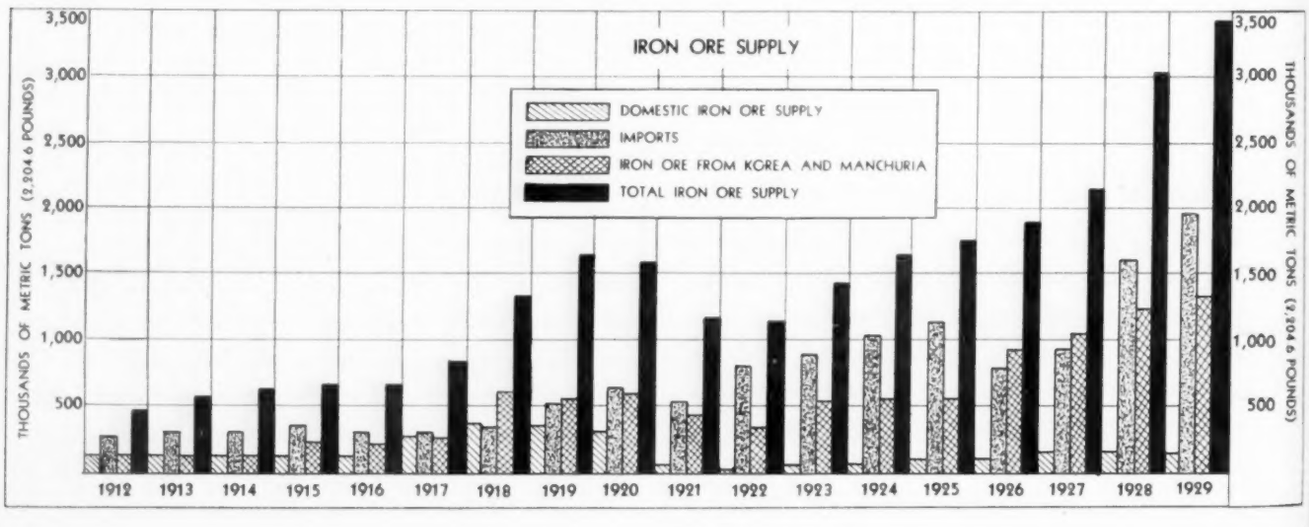
During the past year, the Japanese government has made a vigorous effort to merge all steelworks into a semi-government-owned company but this effort failed because of dissatisfaction of private owners with the valuation of government plants.

Lack of a good coking coal in Japan has made it necessary to import Funshun coal from Manchuria, which has resulted in a high cost of coke, ranging from $6 to $7.50 per ton as against the cost of $2.56 in the United States in 1930 and the average cost of $4.28 for all years between 1912 and 1930, including the war period. The high cost of coke added to the lack of a suitable iron ore in Japan has raised the cost of pig iron to an average of $29.71 per ton for the eight years 1923 to 1930, as against an average cost of $20.01 per ton in the United States for the same period.

Import Pig Iron, Scrap

To reduce the cost of pig iron used in its heavy industries, the Japanese have resorted to the importation of large quantities of pig iron, but even the import prices have averaged $24.78 per ton for the eight years 1923 to 1930, an excess over the American price of $4.77 per ton. To obtain further relief from this high cost of pig iron, the Japanese have resorted to importation of large quantities of scrap, ranging from 4½ per cent of the total iron production in 1923 to nearly 24 per cent of the total production in 1930. With the addition of this scrap at low prices, it has been possible to bring the average cost per ton of pig iron down to $22.17, still $2.16 above the average price quoted in the United States.

Recent progress in metallurgical practice in western countries has established the principle that where the cost of pig iron and coke is high, and the cost of electric power or scrap iron and steel is low, it is preferable to reduce the scrap direct in an electric furnace by adding a small percentage of nickel. This produces a metal of superior machinability at a lower cost than is possible by the



old methods of using coke and pig iron in the cupola.

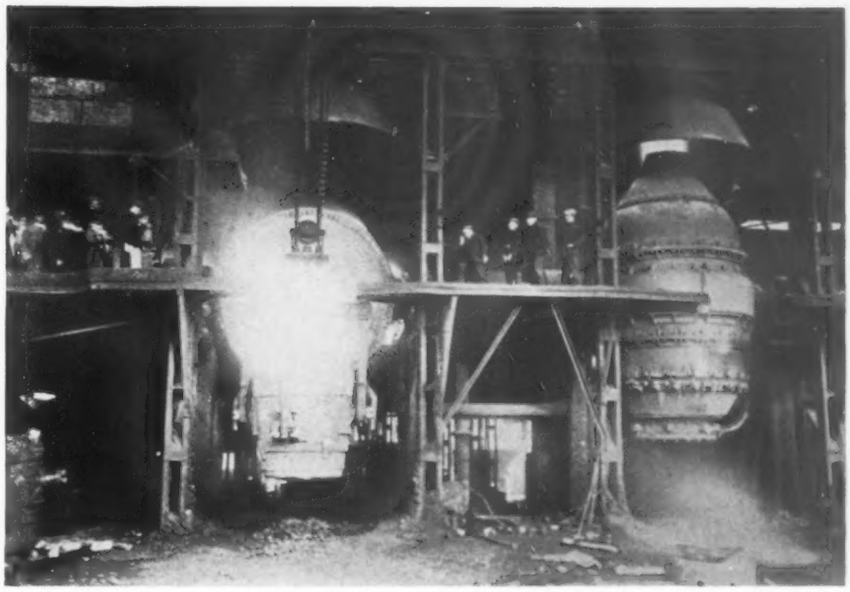
Use of electric furnaces for making iron and steel was introduced into Japan some years prior to the World war; nevertheless, it was not until the war period that electric furnace practice was adopted to any great extent. During the years 1923 to 1930, inclusive, total steel production increased 136 per cent. In the same period, open-hearth production increased 164 per cent; crucible, 17 per cent; and electric furnace, 738 per cent. From the foregoing, it is apparent that fuel costs evidently are in favor of electric furnaces.

Slow To Accept Alloys

There is one notable exception in the otherwise constant progress in Japan's steel industry, and that is in the production of the all-important alloy steels which form the basis of modern industrial development. In this field Japanese production, compared with that of the United States, in 1929 was in the ratio of 1 to 196.

To industrial economists it is apparent, of course, that Japan has been at a disadvantage in respect to the selection of metals. It is a well-known principle that where labor is cheap and material scarce, as in Japan, labor will be wasted and material conserved; conversely, in a country where labor is expensive and material cheap, as in western industrial countries, labor will be conserved and material used freely. As a result of this principle, the free use of material in western countries has resulted in the development and selection of the best alloys; first, because material is abundant and second, because the high cost of labor makes repairs uneconomical.

The reverse of this condition prevails in Japan; that is, material being scarce, it is conserved to a point where low-grade and even scrap stock is used, which results in the necessity for frequent repairs. In the past these repairs may not have been a serious matter in Japan when labor was comparatively cheap, but with the present high wage scale it has become a vital factor in the economic welfare of the nation. Also when Japan's industrial products are sent to foreign markets, this tendency to break down places Japanese industry at a serious disadvantage in competing with western industrial countries.



Courtesy, Consulate General of Japan

Two bessemer converters in operation at government owned mill, the largest in Japan, located at Yawata, on the island of Kyushu

Since 1930, the government has conducted a vigorous campaign for the promotion of home industries and for attaining complete national self-sufficiency in industry, but notwithstanding the sincerity of this effort, which has resulted in some progressive steps in the rationalization of industries little or no attention has been paid by the so-called "home products" campaigners toward the use of alloys of a standard of excellence comparable to those used by Japan's competitors.

Strangely, the use of alloys in Japan has not kept pace with the progress made in metallurgy by Japanese scientists. Renowned metallurgists in England, France and America honor the great work of Dr. Kotaro Honda of the Imperial Steel and Iron institute, Sendai, and yet with the possible exception of the Sumitomo, Mitsubishi, and a few other companies, the industries of Japan are anything but alloy-minded in the modern sense.

Basis of Rationalization

The use of correct alloys forms the very basis of industrial rationalization, if rationalization means approaching an industrial problem intelligently. Therefore, all the efforts of Japanese statesmen, industrialists, exporters and bankers to develop the exports of Japan will avail nothing, if the alloys used in the products exported and in the processes of their manufacture, are inferior to the alloys used in western countries—countries with which Japan must compete. Therefore, it is apparent that Japanese industrialists must become alloy-minded if true rationalization of industry is to succeed in that country.

Import duties on iron and steel cover a wide range from approximately 10 per cent to 20 per cent ad valorem. In some instances the duty is fixed by the weight of the material and in others by the weight of certain elements in its composition, a notable example

Japanese Production of Steel by Forms

Metric Tons of 2204.6 Pounds

ROLLED PRODUCTS

	1923	1924	1925	1926	1927	1928	1929	1930
Bars	209,139	276,092	344,632	427,569	460,446	538,099	595,004	426,279
Shapes	121,619	138,141	137,512	169,577	207,926	262,044	266,083	256,268
Plates	175,187	188,810	235,558	280,357	344,464	429,629	542,925	567,529
Tubes	28,046	34,593	36,240	42,509	50,319	65,460	76,269	88,338
Rails	96,187	82,965	138,405	174,114	178,558	210,678	279,382	302,557
Wire rods	39,528	34,915	29,809	21,093	27,540	152,934	170,042	234,940
Other rolling	90,403	95,192	100,891	139,183	129,293	.....	.....	.....
Total rolled	760,109	840,708	1,023,047	1,254,402	1,398,546	1,658,844	1,929,705	1,875,911

OTHER FORMS

Forgings	21,840	29,586	24,743	24,353	25,475	31,968	38,450	.....
Castings	30,011	27,139	36,188	41,652	43,145	48,675	49,224	.....
Special steel*	7,965	7,415	8,877	18,905	10,942	15,929	18,529	.....
Ferroalloys	.....	.....	11,542	12,208	16,012	17,091	26,335	.....
Total other forms	59,816	64,140	81,350	97,118	95,574	113,663	132,538	.....
Total all forms	819,925	904,484	1,104,397	1,351,520	1,494,120	1,772,507	2,062,243	.....

*Includes alloy steel.

Japanese Production and Consumption of Steel

Metric Tons of 2204.6 Pounds

Year	Open Hearth	Bessemer	Electric	Crucible	Total Production	Total Imports	Total Supply	Total Exports	Total Consumption
1923.....	847,725	103,474	6,292	1,517	959,008	799,177	1,758,185	97,853	1,660,332
1924.....	1,018,680	67,821	11,985	1,205*	1,099,691	1,154,402	2,254,093	91,095	2,162,998
1925.....	1,208,580	74,923	15,496	1,204	1,300,203	532,891	1,833,094	107,505	1,725,589
1926.....	1,400,632	84,677	18,159	2,747	1,506,215	924,731	2,430,946	120,389	2,310,557
1927.....	1,569,552	87,998	26,517	1,175	1,685,242	996,996	2,682,238	179,349	2,502,889
1928.....	1,863,391	3,340	37,746	1,503	1,905,980	764,044	2,670,024	38,024	2,632,000
1929.....	2,238,217	1,048	52,797	1,778	2,293,840	682,215	2,976,055	38,671	2,937,384
1930.....	.....	.....	.....	.....	2,255,900	371,706	2,627,606	73,149	2,554,457
Increase or decrease 1923—1929, Per Cent....	+164	—98	+738	+17	+136				

*Crucible 797, other 408.

being that of alloy steel, subject to the following regulations:

1. Lumps, ingots, blooms, billets, slabs, bars, rods, plates and sheets which contain not less than 0.5 per cent by weight of nickel, chromium, tungsten, molybdenum or cobalt, or containing not less than 1 per cent by weight of silicon or manganese (excluding silicon steel sheets not coated with metal and not more than 0.7 millimeters in thickness):—duty of 18 per cent ad valorem.

2. Lumps, ingots, blooms, billets, slabs, bars and rods which contain not less than 0.7 per cent by weight of carbon, and not more than 0.02 per cent by weight each of phosphorus and sulphur:—duty of 18 per cent ad valorem.

With the exception of special steel otherwise provided for, scrap iron and steel fit only for re-manufacturing is admitted duty free.

Encourage Steelmaking

Further to encourage the production of iron and steel a law was passed in 1926 providing exemption from business tax, business profit tax and income tax for a period of 15 years from the year following installation of equipment to those enterprises with facilities for producing not less than 35,000 metric tons of pig iron or steel per year. These privileges also apply to interests engaged in manufacture of forged or cast steel products, with capacity for producing not less than 5250 metric tons of pig iron or steel per year, to plants engaged in the manufacture of pig iron of low-phosphorus content and crucible steel, and to foundries engaged in production of electric furnace metal with equipment capable of producing not less than 2500 metric tons of pig iron or steel per year.

Study Low-Temperature Coal Carbonization

Tests on the continuous carbonization of finely crushed coal by radiant heat are reported in bulletin No. 65 of the engineering experiment station, Ohio State university, Columbus, O. The investigation was carried out by Floyd B. Hobart and D. J. Demorest, in co-operation with Battelle Memorial institute, Columbus, and was undertaken as a result of interest shown in the commercial possibilities of methods of carbonizing coal at low temperatures. In this work, the White process was studied from the commercial standpoint, and results obtained were not encouraging to the process under present economic conditions, with apparently unlimited resources of oil and gas available. According to the investigators, future possibilities of the process cannot be predicted.

Combination Welding-Soldering Job On 18-8 Steel Presents Problem

ALTHOUGH the welding of corrosion-resisting steel is no longer difficult, an unusual application sometimes arises which offers more of a problem than the mere welding process. Such a problem presented itself recently and its solution offers a possible aid to others using this new alloy steel.

In making an Allegheny metal food container, a manufacturer wanted to solder the seam on the inside of the tank, also to weld along the outer flange for greater strength. Solder would cover the seam smoothly and prevent food particles from lodging which might decay and contaminate subsequent batches. He found, however, that after the welding operation had been performed, a hard oxide deposit in the seam prevented the solder from adhering. If the process were reversed, the high temperature required for welding (3200 degrees Fahr.) would melt the solder, with a melting point of 450 degrees Fahr.

Engineers of Joseph T. Ryerson & Son Inc., Chicago, suggested a plan that was demonstrated successfully before the Waukegan, Ill., Welding society recently. To avoid the objectionable deposit of oxide, the tank was soldered and partly filled with water before welding. The water served to check the intense welding heat that followed, and prevented the solder from melting. The setup is shown in the illustration below.

Welding outer seam of chrome-nickel steel pan while interior is filled with water to prevent melting of solder which covers inner seam

Investigate Embrittlement Of Galvanized Parts

GALVANIZED structural steel angles have been known to break with a brittle fracture through a bolt or rivet hole, but because of the rarity of these cases, the cause remained obscure until recent research was directed upon the subject. As a result of investigation, many points in the embrittlement of structural steel in hot galvanizing have been cleared up and facts developed thus far seem consistent.

Because of a failure which occurred during erection of a large electrical transmission tower, two systematic researches were undertaken at Battelle Memorial institute, Columbus, O., one by the Utilities Research Commission of Chicago in June, 1930, and the other by the American Society for Testing Materials in December of the same year. These studies, carried on with a high degree of co-operation between the two bodies, were merged in July, 1931, and the work since has been sponsored entirely through subcommittee X on embrittlement investigation of A. S. T. M. committee A-5 on corrosion of iron and steel under direction of a steering committee. Many steel producers, fabricators and consumers are co-operating in the study.

From the beginning the problem was planned to obtain an engineering solution and the accomplishment of this aim developed into a sizable engineering research task. Angles in different sizes and in different grades of steel from over 130 heats have been tested thoroughly in a total of over 3000 tests.

No Direct Proof Found

In all these tests, no material of the type spoken of as typically susceptible to embrittlement, that is, described as being ductile in the black but brittle after pickling and galvanizing, has come to light, and no direct proof has appeared that it exists. On the other hand, although in the last year and a half not a single failure due to brittleness in a tranmission tower or other similar structures has been reported, indicating the great rarity of dangerous embrittlement, the study made has shown that in fabricating and galvanizing factors arise which if not understood and guarded against may cause angles to show brittle behavior.

It is not easy to say how much ductility is needed in service after a tower has been put up, although a certain amount would certainly seem to be required safely to withstand sudden applications of overloads such as might arise in violent storms and earthquakes. There can be little question, however, that during the process of erection of a tower, undue brittleness may result in a failure. Such brittleness, that is, failure with little or no deformation at the fracture, is not revealed in the ordinary tension test or even in the notched-bar impact test on unworked material but shows up, if present, when an angle with a hole punched near the toe of one of the legs is tested in the "angle bend test."

Cold Work Has Effect

The secret of the different behavior in the punched hole angle bend test from that in the ordinary tests undoubtedly lies in the cold work produced about the punched hole. Impact tests of cold-worked specimens show similar brittleness. The tearing and cracking which occur about the punched hole may contribute toward brittle behavior, but the test data would indicate this effect to be slight in comparison with the effect of cold working. With drilled or subpunched and reamed holes, severe brittleness is not encountered except in large bessemer steel angles.

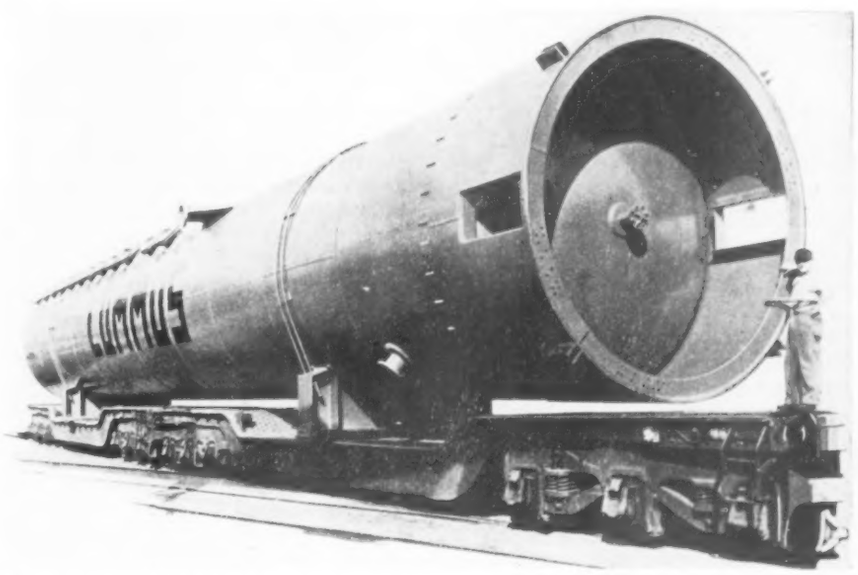
A corollary to the embrittling effect of punching is the effect of the size of the angle; the thicker the angle the greater the effect of punching and the greater the likelihood of brittleness. The coarser grain size in the larger angles also promotes brittle behavior. In the tests made, brittleness was not found in open-hearth angles less than ½ inch thick, infrequently in ½-inch thick angles, but rather frequently in 1-inch thick angles.

Temperature Is a Factor

The incidence of brittle behavior increased markedly on lowering the testing temperature so that these data tended to corroborate reports of angles breaking with a brittle fracture during construction in freezing weather. At 32 degrees Fahr. brittleness is much more marked than at room temperature.

Compared with punching, both pickling and galvanizing may be classed as minor embrittlement factors, although not entirely negligible ones, for often the larger sized angles are brought so near the verge of brittleness by the punching operation that the slight additional effect of pickling or galvanizing is enough to throw the balance toward brittle behavior.

The embrittlement in pickling appears to be due to hydrogen absorption and wears off after standing several days. That in galvanizing appears to be due mainly to an effect which is now receiving a good



NEW ACHIEVEMENT IN WELDED PRESSURE VESSELS: This bubble tower or fractionating column, 93 feet in length and 12 feet in diameter, recently was constructed by the Babcock & Wilcox Co., Barberton, O., and shipped to a New Jersey refinery for use in producing gasoline. Weighing over 325,000 pounds, the tower is built to withstand a pressure of 150 pounds per square inch and a temperature of 700 degrees Fahr. All joints and seams were made by a fusion welding process, inspected by X-ray equipment, and the entire unit stress relieved at 1200 degrees Fahr. Special cars were required to ship the tower in one piece over a distance of 600 miles

deal of attention from research workers in metallurgy, namely, heating to the blue heat temperature region after cold work, the cold work resulting from punching the hole. The penetration of the iron-zinc compound formed in galvanizing along the tears and cracks inside of a punched hole also appears to contribute to the embrittlement, but to a minor degree.

Indicated remedies for embrittlement are drilling or subpunching and reaming larger sized angles, heating to a high enough temperature after punching to eliminate the cold work effect, or the development of a steel less susceptible to embrittlement.

At present the study is being directed mainly toward standardizing the angle bend test and comparing it with a somewhat similar "hole tensile test" in which a coupon cut from the angle with a hole in it is tested in tension with the view of determining the utility of these tests in specifications. Further work is also in progress on ascertaining more definitely which chemical elements are mainly responsible for embrittlement in structural steel.

The most satisfactory solution of the problem would be the development of practical, commercial steel without appreciable susceptibility to embrittlement by cold work. However, the more pressing immediate need is for means of avoiding embrittlement in the present day commercial structural steel now available in quantity so the work is orientated directly toward the engineering and testing phases of the problem.

The final report of the committee directing this research will be presented at the annual meeting of the American Society for Testing Materials in June.

Research Develops Wide Industrial Applications for Molybdenum

GREEKS said "molybdenum" when they meant the material we call lead and they also applied this name to other substances which looked like lead. This information is contained in a discussion of molybdenum appearing in the Jan. 15 issue of *Research Narratives* published by the Engineering Foundation, New York. The article was contributed by W. H. Phillips, vice president and metallurgist, Molybdenum Corp. of America, Pittsburgh.

By the ancients the metal we now distinguish as molybdenum was considered to be some derivative of lead, from which it differs greatly, according to Mr. Phillips. This error is understood easily when one realizes that the rarer metal is most commonly found in nature in the form of molybdenum sulphide, a compound of molybdenum and sulphur, for which the symbol is MoS_2, a soft flakey, black substance resembling graphite.

Discovered by German

Sargent obtained this information from Dr. O. Kochi, faculty of technology, Imperial university, of Tokyo. Years ago a German steel expert analyzed a part of a sword blade made by a famous Japanese artist, Masamune (1330 A.D.) and discovered in it the rare element molybdenum, doubtless as an impurity.

This led the discoverer to ascertain the source of Masamune's alloy iron, thereupon he purchased this iron in large lots, much to the surprise of the Japanese. Later, when the Japanese analyzed captured German cannon, they decided where a part at least of the molybdenum ore was obtained.

Discovered by Scheele in 1778 in the form of an oxide, molybdenum was first separated as a metal by Hjelm in 1782. It is now produced commercially by hydrogen reduction of the oxide, pure oxide being obtained from ammonium molybdate. The resulting metallic powder is sintered, forged and rolled into desired shapes. When pure, molybdenum is soft, white and ductile.

Used in War Materiel

During the last 35 years, says Mr. Phillips, a great deal of research was done in Europe, Japan and the United States and in this time many characteristics were developed. Not until the World war did molybdenum come into prominence; it was used extensively as an alloying element in light armor plate, helmets and Liberty engines because of great increase in strength and toughness imparted to steel.

Even in war time its application was limited because of uncertainty of the supply and high cost. In the last few years, large deposits of ore have been discovered in the United States. There are deposits of varying richness in many parts of the world, but the largest and richest known are located in this country.

Commercial deposits are found ranging in richness from 0.5 up to 8 or 10 per cent MoS_2. After grinding and flotation, the ore is concentrated to about 80 per cent MoS_2 and from these concentrates commercial products are made. Rapid lowering of cost by increased production has resulted in a large portion of the world's requirements being supplied from American mines.

It has been said that excepting for carbon, molybdenum is the most potent alloying element added to steel. It can be substituted for tungsten in the ratio of 1 for 2. In quantities generally used in steel, molybdenum for the most part goes into solution with the iron, though when present in percentages of over 1 per cent, or when considerable quantities of chrome or manganese are present, it forms a double carbide. It is probable also that a definite compound of molybdenum and iron is formed when cooled through critical range.

Aids Corrosion Resistance

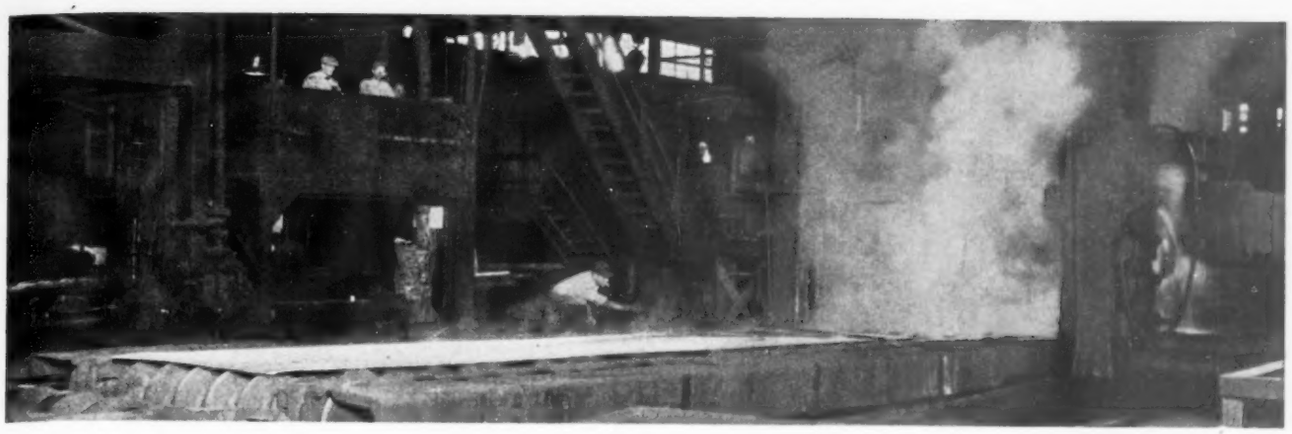
Used in percentages as low as 0.1 per cent, or 2 pounds to the ton, it has shown marked tendencies in resisting corrosion. In percentages up to 10 per cent, it offers a possible substitute for the tungsten high-speed tool steels.

Thin - walled, high - strength, chromium-molybdenum steel tubing has made modern high-speed airplanes possible, for no substitute has been found for highly stressed members in the fuselage. It combines the unusual advantages of high strength without complex heat treatment, easy weldability and no appreciable loss of desirable properties in the welded joints. It enables designers to increase strength with no increase in weight.

The pure metal is used extensively in the incandescent and radio bulb industry and in the forms of salts and oxides it is used in the chemical and dye industries. Literally thousands of miles of molybdenum wire, drawn through diamond dies, have been used in the radio industry.

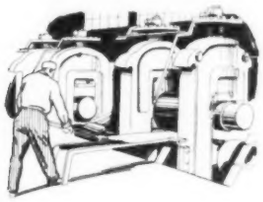
Bar Standard Approved

An American standard for steel reinforcing bars, designated A47-1932, has been approved by the American Standards association. The new standard provides 11 standard cross sectional areas for steel reinforcing bars, ranging from 0.05 to 1.56 square inches. Such designation is commonly used for this product, rather than designating a round bar by its diameter or a square bar by its side dimension. The standard was submitted to the association jointly by the Concrete Reinforcing Steel institute and the bureau of standards.



PROGRESS IN STEELMAKING

WHEN smoke issuing from a smoke stack exceeds a predetermined density the recently developed photoelectric recorder rings a warning bell. The light source is installed on one side of the stack and the photoelectric cell and amplifier on the other. The density is recorded continuously on a clock-driven graph sheet.



AN automatic polisher for sheet and tin mill rolls has been developed to provide maximum production on mills equipped with mechanical feeders and catchers. The new type unit, mounted on the housing of each mill and equipped with an integral drive, polishes the surface of both rolls without interrupting the rolling schedule. At a tin mill in the Pittsburgh district where roll stands are served by individual automatic polishers, the records show more rolling time per turn with an increase in tonnage produced ranging from 10 to 15 per cent.

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Abrasive-resisting wire screening is a newly developed product of a eastern steelmaker. The commodity is especially adapted for vibrating, gravity and shaking screens.

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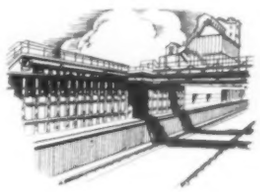
To simplify the addition of concentrated acid to pickling solutions, a New York wire rod consumer has installed a cylindrical supply tank horizontally which is proportioned with each 1 inch depth equivalent to 1 per cent of pickling vat capacity. With a pickling tank of 1000 gallons and with each 1 inch depth of storage tank registering 10 gallons, the addition of 2 per cent acid to the pickling bath is effected by allowing the concentrated acid to flow into the vat until a 2-inch drop is recorded by the glass gage installed on the supply tank.

• • •

Each 100 degrees increase in the preheat temperature of combustion air used in open-hearth furnaces affords about 4 per cent increase in production and 4 per cent decrease in fuel consumption, according to results obtained and to theoretical calculation.

• • •

Telepoise is the name of a recently devised mechanism for continuously weighing and recording materials in transit on a conveyor belt. This is accomplished by the combination of a light-sensitive cell, a radiovisor bridge and a light-source lamp, and a chopper cylinder. Electric impulses, enlarged by two amplifying tubes, operate counters of the electromagnetic type and a time chart recorder.



HIGH-GRADE coke for metallurgical purposes recently has been produced in by-product ovens by coking hard pitch obtained from tar.

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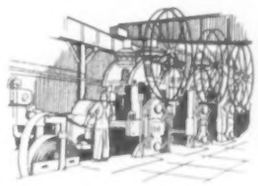
Accumulators used in conjunction with high-pressure water systems for descaling steel now are charged by a recently developed method which eliminates the air compressor. The pump is actuated continuously by a synchronized motor and is loaded and unloaded according to the demand. A synchronized suction valve control is made to function by a solenoid and an electric pressure regulator. Unloading the pump at maximum pressure and again loading at lower pressure is accomplished by the regulator connected to the air side of the accumulator and without shock or loss of pressure water.



RECENT completion of a new tandem 72-inch 4-high cold-strip mill brings to light a number of auxiliary machines never before used and which will tend to revolutionize cold-rolling methods for wide material. The hot-rolled stock is received by an uncoiler which detaches one end of the coil and delivers it into the continuous cold mill. New type guides on the mill work in conjunction with this operation. The strip then passes through the different stands, arranged in tandem, and then is taken by a newly invented reel guide machine, which automatically delivers it to the cold-strip reel. When fully coiled, the drum of the reel collapses, permitting the material to be removed. The final product is delivered with no manual operation other than the use of control buttons.

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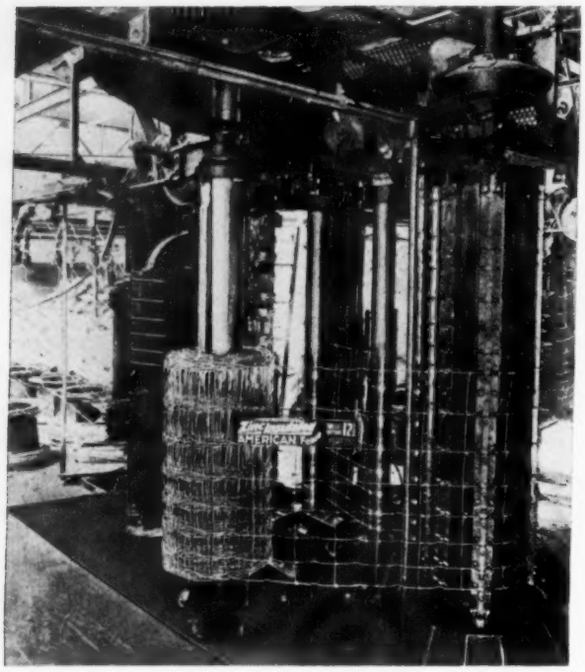
Permanent magnet steel containing a high percentage of cobalt and capable of maintaining a strong magnetic flux over relatively long air gaps, is the most recently developed product of a Pennsylvania steelmaker.



Courtesy, American Steel & Wire Co.

APPROXIMATELY 500,000 tons of steel is consumed annually in the manufacture of woven wire fencing, which is used principally in the agricultural districts. The illustration shows a standard type of weaving machine, into which galvanized wire is fed from the reels

Large Uses of Steel In Small Ways

212th Article ◆ Woven Wire Fencing

MANY factors have played a part in bringing the business of farming to an economically sound foundation. One of the most important was the advent of woven wire fencing.

The pioneer farmer made his fence out of stumps, rails or boulders. Woven wire fencing was little known in those days. Later barbed wire came into use, enabling the farmer to spend his time more profitably raising crops than painfully splitting rails or making boulder or stump fences.

Barbed wire still is used today to a great exent but woven wire fencing now is the dominant form of enclosure. Today more than 500,000 tons of steel goes into the making of woven wire fencing annually. There are innumerable uses for fencing on the farm—for protection to stock and crops, for temporary fields and pastures for diversified farming, poultry farming and fur and fox farms. It also is used for enclosing industrial plants, parks, playgrounds, cemeteries, estates, airports and golf courses.

Great care is used in making the wire for the fencing. It must be smoothly drawn for the process of galvanizing. The wire after being galvanized is placed on drums and from these drums is fed into weaving machines.

The sizes of wire generally used range from No. 9 gage to about No. 12½ gage for field fencing, and from No. 12½ gage to about No. 17½ gage for poultry fencing.

Major Use on the Farm

Steel wire, within the past few years, has become one of the most familiar products entering into every-day use. Without its dependable strength, compared with its light bulk, many of our most important projects would fail of realization.

The major part of the output of woven wire fencing is consumed in the interest of agriculture. Fencing goes hand in hand with profitable farming. There was a time when little if any attention was paid to the layout of a farm, to the arrangement of fields and pastures. But that day has passed, and with it have disappeared the old methods of feeding and farming.

There are many reasons why fencing is an absolute necessity and several of them are: It enables the farmer to practice profitable crop and live stock rotation; it enables him to build up soil fertility; it prevents injury to high priced animals; it increases pasturage per acre; it checks disease by keeping hogs on clean ground; it prevents live stock from breaking through into growing crops, and it helps beautify the appearance of the farm land.

When one observes a medium size farm and takes into consideration the number of such farms throughout the country it is an easy matter to visualize the enormous tonnage of steel which is used annually in the manufacture of woven wire fencing. Fencing is an industry in itself which in turn promotes the success of one of our greatest institutions—agriculture.

Intermittent Blast Furnace Operation Is Topic

The subject of intermittent blast furnace operations occupied the principal attention of members of the Eastern States Blast Furnace and Coke Oven association at a meeting held in Pittsburgh Feb. 26. A paper on this subject was presented by F. C. Davies, blast furnace superintendent, Donner Steel Co., Buffalo. Other general subjects pertaining to blast furnace and coke oven operations also were discussed.

At a dinner held in the evening plaques were presented to former presidents of the association. The following individuals received this recognition: J. G. West Jr., Jones & Laughlin Steel Corp., Pittsburgh; E. F. Vogel, Youngstown Sheet & Tube Co., Youngstown, O.; D. M. Rugg, Koppers Construction Co., Pittsburgh; H. E. McDonnell, Weirton Steel Co., Weirton, W. Va.; C. R. Meissner, Weirton Steel Co., Weirton, W. Va.; and J. E. Lose, Carnegie Steel Co., Pittsburgh. Two other former presidents who were not present to receive plaques include W. A. Haven, Arthur G. McKee & Co., Cleveland, and B. W. Winship, Bethlehem Steel Co., Steelton, Pa.

Symbols Standardized

Symbols for mechanics, structural engineering and testing materials, designated Z10a-1932, have been approved by the American Standards association as American standard. The standard comprises letter symbols for 69 quantities commonly used in these fields. These symbols were prepared by subcommittee 1 on mechanics, structural engineering and testing materials of the sectional committee on scientific and engineering symbols and abbreviations. Copies of the standard may be obtained from the American Standards association, 29 West Thirty-ninth street, New York.

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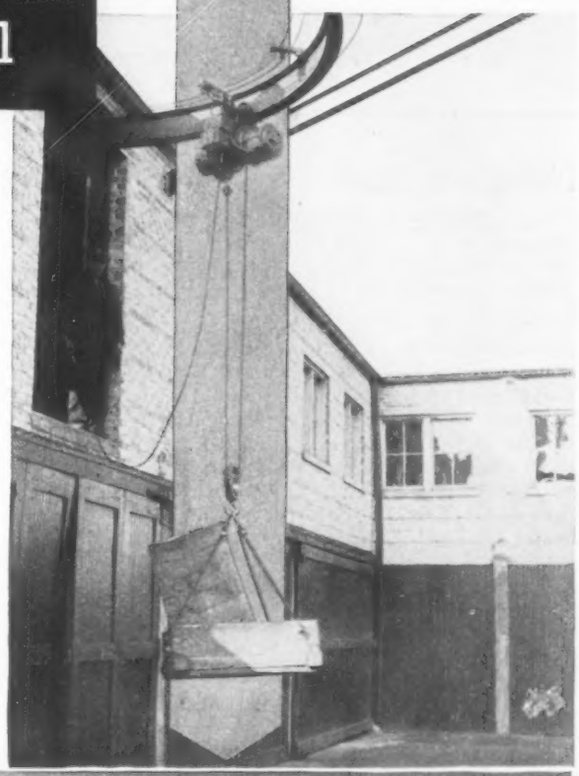

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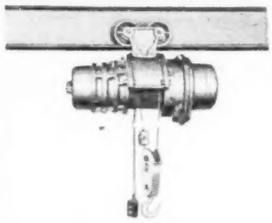

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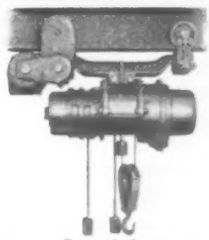

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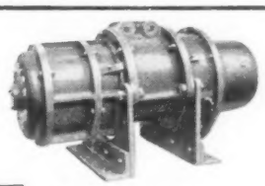

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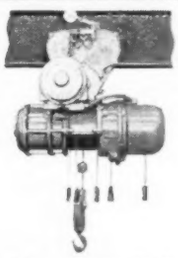
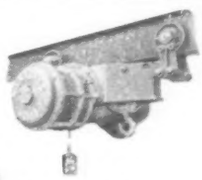


☐ Motor Driven Trolley

☐ Bolt Suspension



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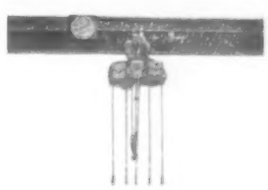

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Scanning the Technology of Steel

A Digest of Important Developments in Scientific Research, Engineering Progress and Operating Procedure Pertaining to the Production, Processing, Application and Performance of Steel

Nickel and Steel

The story of nickel, by William H. Baldwin, in a pamphlet published by the International Nickel Co. Inc., New York, 44 pp., 20 illusts.

The story of nickel is intimately associated with the development of alloy steel, since a large proportion of the nickel produced goes into these alloys. Development of nickel steel ordnance during the World war furnished the major impetus toward the attainment of the present position which nickel occupies. Hipernik, permalloy, monel metal, permivar, nickel cast iron, stainless steel, are only a few of the forms in which nickel contributes to the high level of modern civilization.

Since 1850 about 1,000,000 tons of nickel have been produced and consumed for all purposes throughout the world. From 1850 to 1885 only 14,000 tons were produced, while during the next quarter century the total reached 230,000 tons. The next decade, including the war period with its vertical rise in consumption, saw the figures jump to 357,000 tons. Since then, the average has been 32,000 tons per year, with a peak of 68,000 tons in 1929, and a low of 8200 tons in 1921.

The pamphlet presents intensely interesting historical data concerning the many pioneers in nickel's development, in addition to a complete picture of present methods of mining and smelting nickel ore, and refining the anode nickel to a commercially pure product.

—STEEL, 3-7-32

Stainless Iron

Effect of heat treatment on corrosion resistance of stainless iron, by Clarence G. Merritt, a paper presented at the annual meeting of the American Institute of Mining and Metallurgical Engineers in New York, Feb. 15-18, 1932, 18 pp., 5 tables, 14 illusts.

Tempering at about 1000 degrees Fahr. from the as-quenched or as-rolled condition produces marked susceptibility to corrosion and weakness in impact in stainless iron. This is accompanied by a lower hardness, a weakening in proportional limit and a general breakdown of the metal. Tensile properties and corrosion resistance of heat treated stainless iron are excellent when tempered either above or below the susceptible range. Partly hardened or as-rolled steel is likely to be subject to attack unless tempered at 1100 degrees Fahr. or higher.

The brittle point and range of lessened corrosion resistance is coincident with the breakdown of the chrome-martensite to chrome-troostite. The formation of a fine precipitate of carbides at the grain boundaries and within the grains is advanced as the explanation for the phenomena.

—STEEL, 3-7-32

Welding

Welding nonmagnetic steel alloys, by Paul Orr, in Machinery, March, 1932, p. 489, 2¼ pp., 3 illusts.

Arc welding of nonmagnetic nickel-manganese steel tops to mild steel sides of oil circuit-breaker tanks requires a number of precautions. The joint should be so designed that the metal being joined can be fused properly without using excessively high currents. The work should be clean and held securely by jigs, clamps, etc. The welding current should be reversed with the work negative and the electrode positive. A welding wire of the 18-8 chrome nickel analysis, with low carbon content, is best suited for the work. The wire should be processed and properly coated.

—STEEL, 3-7-32

Cleaning Steel

Preparation of steel prior to electroplating, by George B. Hogaboom, in Metal Industry, February, 1932, p. 59, 3 pp., no illusts.

Until recently too little study has been given to the preparation of steel surfaces for electroplating. The physical character of steel has a direct bearing upon the quality of the deposit obtained, and further it is essential that any protective oil coating on the steel be removed before plating. The best practice to remove this coating is the two-cleaner method: A soap solution to emulsify the mineral oils and to remove the majority of the greases or compounds; and a caustic alkali bath used either as immersion or with an electric current cleaner system. The electric cleaner method has certain advantages. A direct current should be used, followed by a few minutes of alternating current in a separate solution.

Acid pickling of steel after caustic cleaning is a most important step, one upon which the bond between the steel and the plate depends. Immersion acid pickling can be used with success on cold-rolled steel or upon steel that has been polished. Strength of acid and time of pickling should be such that the surface is slightly yet imperceptibly etched. A recently developed process (STEEL, March 12, 1931, p. 51) of electric pickling has been used with good results. This so-called bright-dip treatment not only pickles the work but also brightens the steel so that it has the appearance of having been plated. By this process all scale, even that in the deepest pits, is removed; and the steel is claimed to be in perfect condition to be polished or to receive an electrodeposit directly.

—STEEL, 3-7-32

Forging Shafts

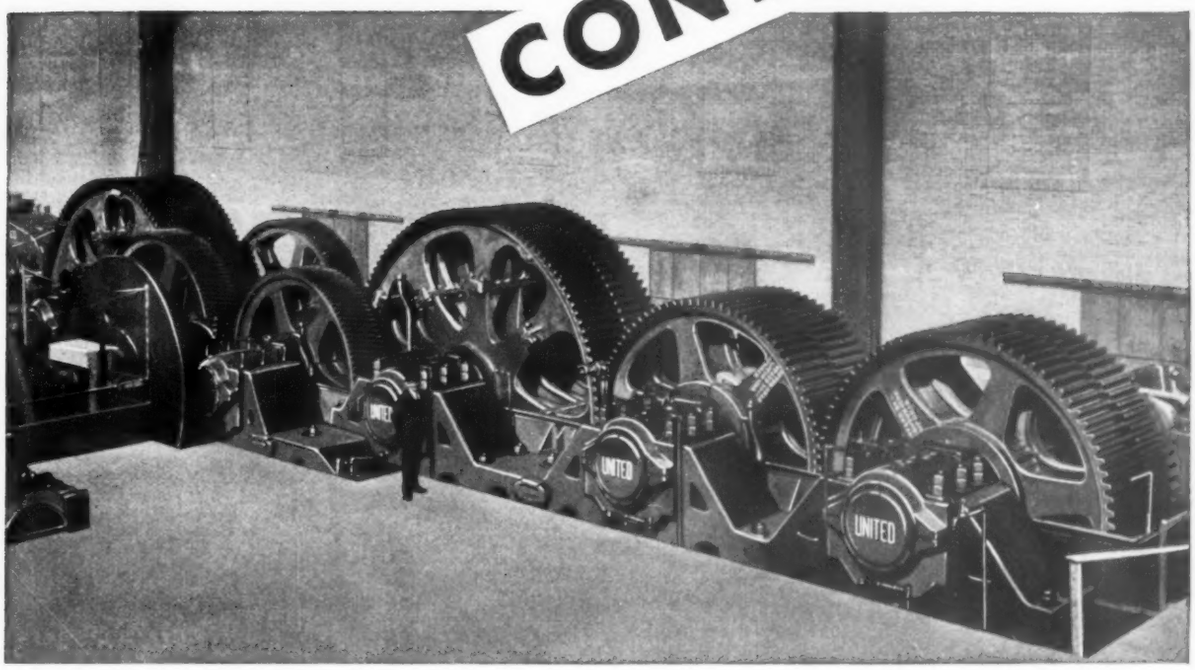
The manufacture of forged shafts, by R. V. Wallace, in Heat Treating and Forging, February, 1932, p. 95, 3 pp., 2 illusts.

In forging large shafts, the operator should be guided by a knowledge of three fundamental principles governing hot work: Insuring against overheating or burning preparatory to forging; working well in the plastic range to avoid the crystalline distortion and strain attendant with working at too low a temperature; and finishing the metal at the critical range in order to obtain the maximum grain refinement possible.

However, in view of the several factors inherent with the process, which make close control over these and other important metallurgical elements rather difficult, the finished forging generally will require a special heat treatment in order to be made more dependable for service, this treatment consisting of a preliminary high-temperature normalizing, some 300 degrees Fahr. above the critical range, followed by a second normalizing treatment at normal temperatures.

—STEEL, 3-7-32

● NO METAL TO METAL CONTACT HERE



Driving three roughing roll stands on a continuous plate mill, this huge gear unit develops 4,000 horse-power. Only the very finest of lubricants could be entrusted with the exacting job of protecting it from costly metal-to-metal contact. Like many other similar units in steel mills, the gears and babbitt-lined bearings of this entire assembly are lubricated throughout with No. 6 Penola Leaded Compound.

Penola Leaded Compound is the ideal lubricant for extreme pressure conditions. Of proper consistency for use in lubricating systems for both gears and bearings, it provides a non-corrosive protective film on the gear teeth capable of withstanding three to five times the pressures at which ordinary lubricants fail. The ability of Penola Leaded Compound to carry heavier loads with a higher factor of safety has solved perplexing problems in the mills throughout the country and the world.

Let us help you with your lubrication problems. Our experienced engineering staff is always available or, if you prefer, we shall be glad to mail you complete literature.

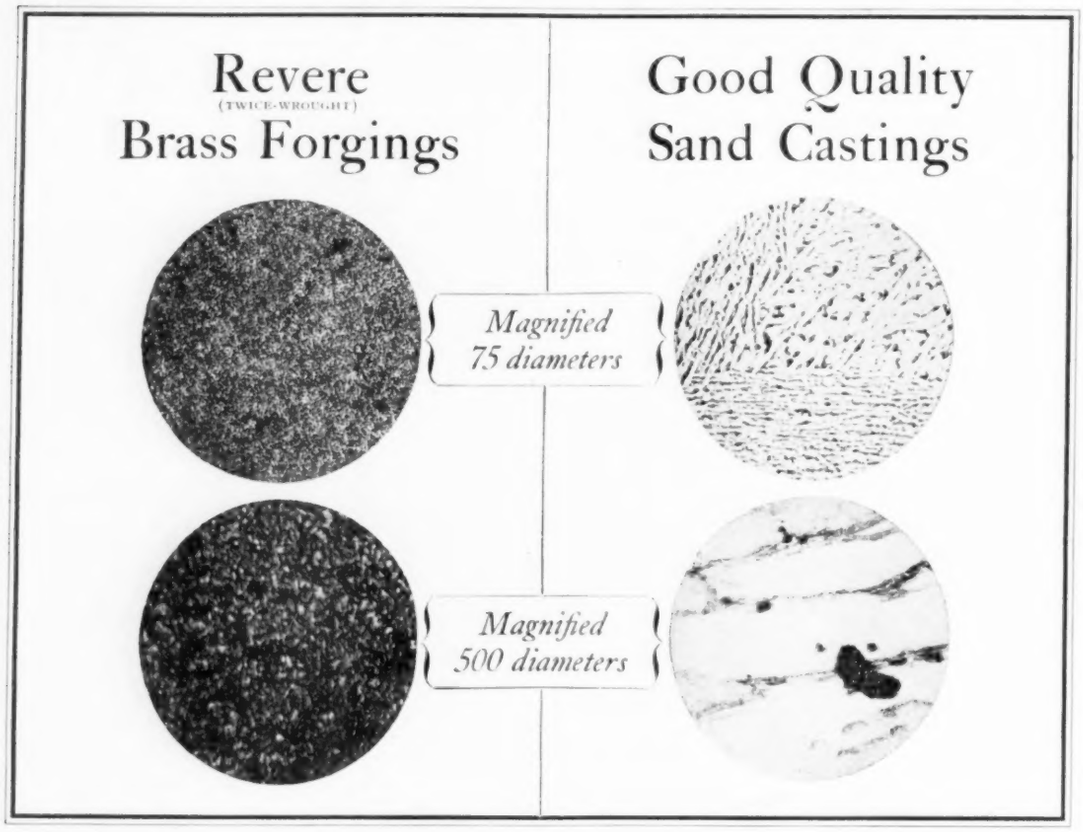
PENNSYLVANIA LUBRICATING COMPANY

PITTSBURGH, PENNSYLVANIA

1885—*Lubrication in the Steel Industry*—1932

A Subsidiary of the Standard Oil Company (N. J.)

Photomicrographs



These photomicrographs explain why with Revere Brass Forgings (TWICE-WROUGHT) *you get . . .*

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Revere Forgings are made by both the Rome Division, Rome, N.Y., and Dallas Division, Chicago, Ill., insuring prompt deliveries and close service contact. For further information, write Revere Copper and Brass Incorporated, 230 Park Ave., New York City.

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New Equipment

PRODUCTION FABRICATION TREATMENT FINISHING

Nonproductive Man and Machine Hours Represent Huge Industrial Loss

SCRAP piles made up of spoiled work always have been considered to be something of a criterion of efficiency of a manufacturing plant. A scrap pile is impressive because it reacts immediately upon the senses. It can be seen, can be measured and one can stumble over it if it happens to be in the way. In other words, the conventional scrap pile is tangible.

There is another kind of industrial scrap pile, however, which is invisible, but which nevertheless represents an appalling loss in many industries in which tangible scrap piles may be conspicuous only by their absence. Industry's great intangible scrap pile is made up of accumulated nonproductive hours of men and of machines.

The history of development of industrial equipment largely has been a history of the reduction of nonproductive time. This has been accomplished and still is being accomplished by machine designers, primarily through speeding up of operations, through substitution of continous processes for intermittent ones, by shortening the cycle of unavoidable "idle" movements of production machinery and through better methods of materials handling. When analysed, it will be realized that such developments as high speed steel, tungsten and tantalum carbide, hydraulic and electrical control of machinery, etc. essentially are contributions toward the reduction of this great intangible scrap pile.

Seconds Saved—Hours Wasted

It is of little avail for machine designers to outdo themselves in perfecting methods by which seconds are shaved off the production time per piece, if minutes or even hours of this same precious time are to be wasted through faulty methods of plant management, as represented by machine maintenance, flow of stock to the machine, inefficient inspection methods or even deliberate loafing on the part of operators in case they are on an hourly basis.

Production men and factory managers long have realized the need for detecting and eliminating nonproductive time. All manner of systems ranging all the way from the old fashioned "slave driving" foreman to the most uptodate wage incentive plans have been inspired by the necessity of getting the most out of men and machines—in other words, to reduce industry's intangible scrap pile.

Many points of weakness have come to light in such production control plans. One has been the necessity of adding more nonproductive time in the form of clerks, time study men, etc. in order to discover and eliminate nonproductive time of machines and machine operators. In some cases it is doubtful whether anything was gained in the end.

Tardy Records Are Useless

Another weakness has been that the records through which time expenditure is made visible—in other words, reduced to tangible form—have not been records of the present minute, the present hour or even the present day. There has been such a lag between the gathering of the data and its interpretation that it becomes a mere historical record.

The day undoubtedly will come when this difficulty will be met by accurate recording instruments which will register and record the performance of production machinery and the operators thereof just as instantaneously, just as accurately and just as completely as modern recording meters indicate the performance of steam boilers, industrial ovens and furnaces, electrical machinery etc.

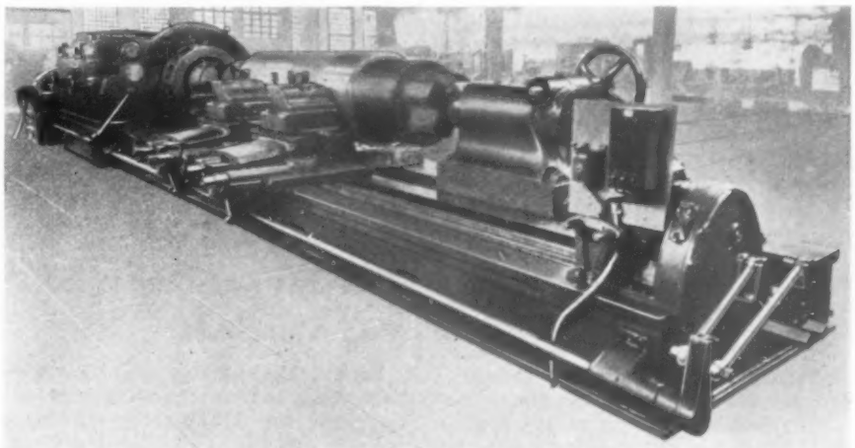
With ultimate mechanization of production control, nonproductive time will become "visible" and the elimination of industry's greatest scrap pile will be tremendously accelerated.

◆

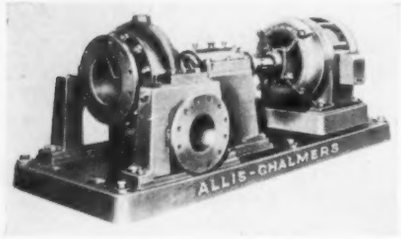
Roll Turning Lathe Meets Modern Conditions

Mackintosh-Hemphill Co., Pittsburgh, has acquired exclusive rights to manufacture and market a roll turning lathe of extremely rigid and heavy design. Development of this type of machine has been brought about by the introduction of high speed cutting tools of such alloys as tungsten carbide, etc. Cutting speeds and feeds have been increased in this unit to meet modern conditions in machining chilled rolls or others of extreme hardness.

The accompanying illustration shows this new type of roll lathe in operation at the Garrison plant of the Mackintosh-Hemphill Co. Its capabilities are claimed to exceed those of any similar machine now on the mar-



Rigid and heavy construction to meet requirements of modern high speed cutting tools characterize this Mackintosh-Hemphill roll turning lathe



Allis-Chalmers pump handles acids in process work

ket. Chilled iron roll bodies of 58/61 scleroscope hardness are being turned with this lathe at the rate of 30 feet per minute with a cutting depth of ⅛-inch and a 3/16-inch longitudinal feed. The performance of the machine is characterized by productive efficiency and precision of finshed rolls.

◆

Centrifugal Pump Handles Hot or Cold Acid

Allis-Chalmers Mfg. Co., Milwaukee, is building a new pump for handling acids in process work. It is of the single suction type and all parts coming in contact with the acid pumped are made of chrome steel. To insure uniform expansion from the center of the pump when handling acids of high temperature, the casing is supported on the horizontal center line by brackets and it is also keyed on the vertical center line underneath the water cooled stuffing box.

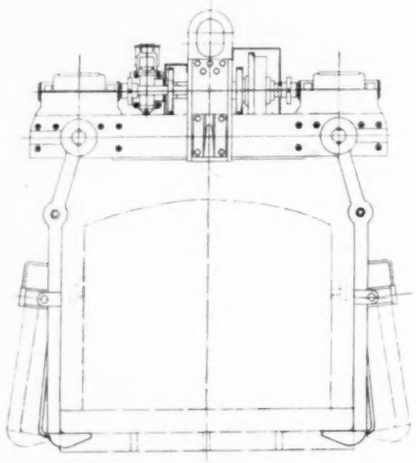
The pump is so constructed that the rotating element including the self-aligning, antifriction, bearings and the Falk coupling can be removed through the suction end of the pump without disconnecting the discharge piping or casing brackets or disturbing the motor. Tests of these pumps show high efficiency and quiet operation.

◆

Annealing Box Carrier Is Motor Driven

Wean Engineering Co. Inc., Warren, O., has acquired from a large producer of sheet and tin plate, a license to manufacture and sell a patented motor driven annealing box carrier, shown in the accompanying illustration. Failure caused by premature opening of hooks is prevented in this new carrier by the use of self-locking worm and worm wheel actuating mechanism, which when properly set cannot slip open, dropping the load. This safety feature is of particular importance in tin mill annealing departments where the product is being transported over cold rolls, and in examining departments where workmen are continuously engaged.

An example of a definite operation may be helpful in visualizing the manner in which motorized lifting hooks are used. Assuming an annealing furnace is about to be charged, the single hooker guides the opened grab hooks into place between the lugs on the annealing box bottom, and the grab hooks of the carrier are properly aligned. The crane operator closes the hooks by power from the crane cab and the mechanism latches automatically. The crane then deposits the annealing box in position on the furnace charger, releasing the hooks automatically without the assistance of a follower or hooker, and returning to the location of the next box



Wean Engineering Co. Inc. markets this annealing box carrier

to be spotted, where the hooker again guides the carrier into place.

When unloading the charger following annealing, the cycle is carried out in a reversed manner; thus, one crane follower may be substituted for the three formerly required. Carriers of similar construction can be used for handling sheets, tin plate, strip steel and at all other places where hand operated carriers have formerly been used.

The type of installation, of course, governs to a certain extent the design of the carrier, although basic features remain the same.

◆

Develops Attachment for Stud Manufacture

Landis Machine Co. Inc., Waynesboro, Pa., has developed a stud attachment for its ¾-inch automatic forming and threading machine which gives the unit a production rating of 200 to 500 per cent as a stud machine. This high rating is due to the fact that the loading and unloading, pointing and threading operations are performed simultaneously at three separate stations. Another noteworthy feature of the attachment is its ability to handle sheared blanks.

Attachment consists of a hopper and a magazine as shown in the illustration herewith. An agitator located at the base of the hopper insures an orderly and uninterrupted flow of the blanks to the magazine. From the magazine the blanks are fed, one at a time, to a slot through which they drop into an auxiliary magazine.

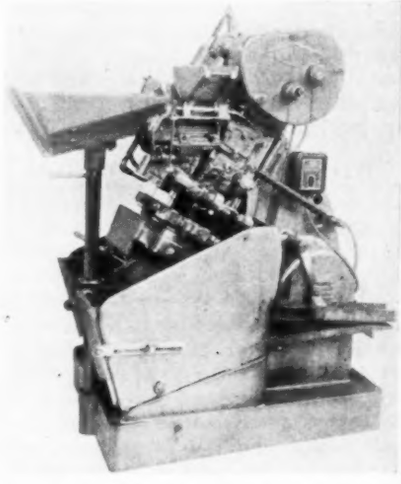
For the second operation, the semi-finished studs are stacked in the hopper with their blank ends at the front of the hopper. The front wall of the hopper is hinged and can be dropped to facilitate loading. The pointing head takes care of any variations in the lengths of the blanks and insures studs of uniform length.

The attachment is a self-contained unit which can be applied to machines in service. It is adjustable and will accommodate studs from ¼ to ¾-inch diameter, from 1 ½to 6 inches in length and a 2½-inch maximum thread length.

◆

Designs Automatic Spray Finishing Unit

DeVilbiss Co., Toledo, O., has developed automatic spray equipment, recognized as an innovation in the industrial finishing field. In the accompanying illustration is shown one type of spray finishing installation, a generator finishing machine. This unit is entirely automatic and requires no spray operator. The



Landis Machine Co. develops stud attachment for this unit

THE TIMKEN LOCOMOTIVE

100,000 miles without bearing trouble

A revolutionary accomplishment in locomotive operation

Again Timken has successfully pioneered a great forward step in anti-frictionization, and as a result, another important chapter has been added to the history of railroad development.

The Timken Locomotive was the first locomotive in the world to be completely equipped with anti-friction bearings on all axles—leading truck, driving wheels, trailer truck and tender trucks.

It was built by Timken to demonstrate the advantages of Timken Bearings in locomotive operation, and was placed in service on April 15, 1930. In January this year, the Timken Locomotive completed its official service test of 100,000 miles. This mileage was made on 14 railroads in regular passenger and freight service, and under every conceivable running condition.

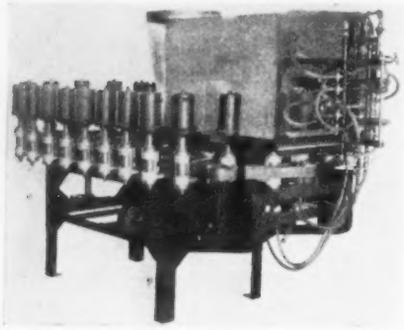
Tough as locomotive operation is on bearings, the Timken Bearings in the Timken Locomotive have given no trouble whatever. No bearing repairs or replacements have been made. Railroad master mechanics and engine foremen know what this remarkable performance means. They will tell you of the tremendous savings it will effect in locomotive maintenance... the dependability it assures.

It may seem a far cry from locomotives to steel rolling mills, but the same exclusive combination that has enabled Timken Bearings to do what had never been done before in all railroad experience, assures power savings as high as 50%; large lubricant economies; greatly increased dependability and many thousands of tons of extra service on mill roll neck bearings.

That combination is Timken tapered construction; Timken positively aligned rolls; and Timken-made steel—the combination that eliminates friction and carries all radial, thrust and combined loads at the same time. It will pay you to specify Timken-equipped.

THE TIMKEN ROLLER BEARING COMPANY, CANTON, OHIO

TIMKEN *Tapered Roller* **BEARINGS**



DeVilbiss automatic generator spray finishing machine

generators pass under a group of automatic spray guns which direct the finishing material over the product in the required manner.

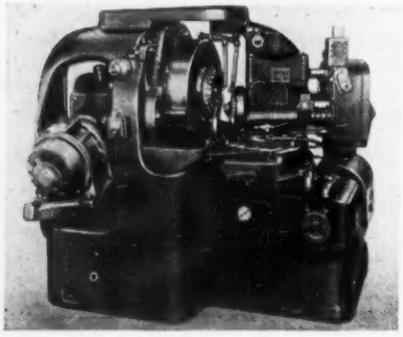
Automatic finishing of products has been widely accepted in practically every industrial field. The lumber industry now primes lumber with aluminum paint by automatic equipment.

◆

Spiral Bevel Gear Rougher Is Automatic

Gleason Works, 1000 University avenue, Rochester, N. Y., recently placed on the market a spiral bevel gear rougher with a capacity for gears up to 5½ inches cone distance, 8 to 1 ratio, 11-inch pitch diameter and 3 D. P. Time required for removing the roughed out gear and replacing it with a blank has been reduced to a minimum. Automatic features of the machine have been fully protected by special safety devices embodied in the design, making the operation as nearly foolproof as possible. The unit, designated No. 10, is shown in the accompanying illustration.

After the gear blank and clamp plate are put on the spindle by the operator, the machine continues through its operations automatically.



New Gleason No. 10 spiral bevel gear rougher

The cutter spindle is mounted in a saddle in the upright, the entire saddle assembly being adjustable both horizontally and vertically for setting the cutter for the proper spiral angle. The cutter is driven through a pinion driving an internal gear bolted to the cutter spindle face plate. Mounted directly on the frame of the machine, the work head has the usual angular and linear adjustments to accommodate gears of various pitch angles and cone distances.

Chucking mechanism is an integral part of the machine. The work is held in place by a spring which is automatically released when the head backs away from the cutter after the last tooth is roughed out. The gear

New Tagliabue indicator recorder

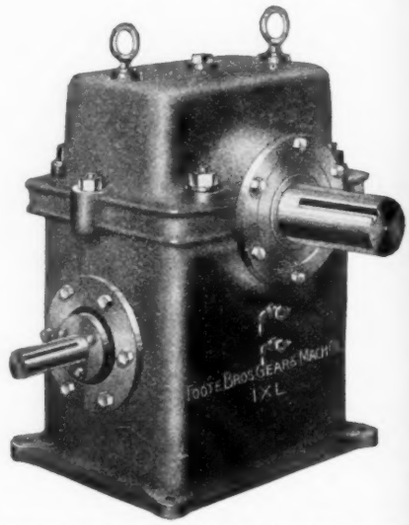
is also ejected from the arbor and the operator has only to lift it from the spindle.

◆

Speed Reducers Available In Five Types

Foote Bros. Gear & Machine Co., 215 North Curtis street, Chicago, has added to its series of worm gear speed reducers, a unit designed to transmit up to 14 horsepower continuous duty. This capacity depends on driving shaft speed and reduction ratio. The worm and worm gear of the new size 5-HG are mounted in an oil tight, cast iron housing which provides a rigid support for bearings.

All shafts are heat treated alloy



Speed reducer built by Foote Bros. Gear & Machine Co.

steel mounted on oversize antifriction bearings, which permit hung load of 1750 pounds on the slow speed shaft of the vertical type. Maximum chain pull of slow speed shaft is 1375 pounds. Lubrication is accomplished effectively by splash system. Oil circulation is obtained through the action of worm and gear with the case so designed that oil is supplied automatically to all bearingss.

Size 5-HG is being built in five types with ratios ranging from 3.5:1 to 3000:1.

◆

Offers New Automatic Flue Gas Analyzer

C. J. Tagliabue Mfg. Co., Brooklyn, N. Y., now is offering a new all-metal automatic flue gas analyzer or indicator-recorder, shown in the illustration herewith. The instrument not only indicates and records the per cent of CO_2 but also gives an accurate record of the per cent of combustibles, such as $CO+H_2$ which may be present in the flue gases. This is considered by engineers to be of extreme importance in the economical operation of furnaces.

The company reports that this new development works on the orsat principle, analyzing chemically and indicating and recording electrically. It is simple in design. The large illuminated dial and pointers can be easily seen at a distance of 30 feet, and in addition the records are made on a 9-inch, 24-hour circular chart with open graduations inviting a precise study of the continuous performance curve.

QUICK RESPONSE TO YOUR NEEDS

THE Union Drawn organization is geared for prompt action on the needs of customers and is daily meeting the demands of emergency. Every effort is made to cooperate with buyers who are working toward lower inventories.

Six large mills are available for tonnage production supplemented by abundant stocks on hand. Hundreds of jobbers located at all sections carry stocks for immediate shipment.

For either standard or special requirements, you can depend upon the quick response of Union Drawn Service.

UNION DRAWN STEEL CO.
BEAVER FALLS, PA.

Faster and Smoother Production with UNION HYMO

UNION Hymo is the first definite improvement in those fields where previously S.A.E. 1020 has been the best obtainable product.

A comparison of these steels shows that Hymo greatly speeds machining operations, requires far less tool changes and develops fewer rejections. Its cutting qualities leave a smooth finish and better appearance.

The carburizing properties of Hymo present additional advantages over S.A.E. 1020. Penetration of carbon during heat treatment is from 25% to 50% more rapid. Results show a sound structure, tough core and very hard, uniform case.

Hundreds of plants are getting faster production and lower costs through the adoption of this special high manganese, open hearth steel.

Have our representative acquaint you with all of the characteristics of Hymo and discuss its application in your plant. An interesting booklet will be mailed upon request.

UNION DRAWN STEEL CO.
BEAVER FALLS, PA.

Shape, Railroad Bookings Expand

Automotive Requirements Still Slow—Steelmaking Rate Barely Holding at 25 Per Cent—Active Blast Furnaces Register Second Consecutive Gain

WHILE automobile requirements for steel, which were expected to supply a noteworthy lift to production early in March, continue a mirage, structural steel inquiry and bookings have expanded to the largest volume of the year and railroad placements of track and repair material are broadening each week.

Steelmakers are with difficulty maintaining operations at 25 per cent, sharp losses at Birmingham and Buffalo canceling slight gains at Pittsburgh, Youngstown and Cleveland. Sentiment has become somewhat diluted, but reasonable hopes still are entertained that Ford releases, expected daily, and the rolling of some railroad business now being entered will enable March to close better than it opened.

To the end of last week, Ford steel requirements still were restricted to pickup lots plus the needs for the 20,000 of the new fours and eights scheduled for March assembly. In northern Ohio pig iron releases were accelerated by the distribution of some Ford castings orders. Other makers, especially in the low-price field, continue blighted by the uncertainty of Ford and a majority have further reduced their schedules.

Reflecting improvement in the credit situation resulting from federal legislation, practically all railroads are increasing shop operations, and expanding steel purchases, moderately. Chicago mills expect to book 20,000 to 25,000 tons of rails, about half the order anticipated shortly from the New York Central. Southern Pacific has placed 25,000 tons of rails. The Erie has purchased approximately 6000 tons of track fastenings and the Nickel Plate about 3000 tons; Seaboard Air Line is taking bids on plates and shapes for second quarter.

Significantly, freight car orders so far this year—150—are ahead of the comparable period last year. Though inquiries for 215 freight cars are active, builders do not expect to receive substantial orders until fall. Railroads are buying considerable air-conditioning equipment.

Seasonal influences are more apparent in structural awards for the week, 24,299 tons, comprised mainly of public projects such as 3000 tons for the Atlanta, Ga., postoffice, and 2600 tons for grade elimination work at Buffalo. Pending are 8000 tons for an addition to the Washington postoffice and 2000 tons for the capitol building, Bismarck, N. Dak.

American tin plate producers have increased their export price 45 cents per base box, following a milder advance by foreign sellers. Welsh mills are forming a pool to stabilize the market. On an accumulation of orders from can manufacturers, valley operations are up slightly to 50 per cent. As an indication of the eagerness of heavy finished steel mills for orders, a substantial tonnage of steel, mainly plates, for a Panama dam project has brought out bids from 350 companies.

Pig iron statistics for February augur well for March, in view of the net gain of three active stacks, in sequence to the net gain of four in January, which registered the first increase in the number of active stacks in ten months. February raised the total to 64. Total production for February was 960,550 gross tons, daily output averaging 33,122 tons, up 5.7 per cent.

Abnormal market conditions in the valley pig iron market have modified some of the usual differentials between foundry and steelmaking grades. Scrap is more active at Pittsburgh, a steelmaker having purchased upward of 20,000 tons of heavy melting steel.

STEEL's iron and steel composite remains $29.53; the finished steel composite $46.82, and the steelworks scrap composite $7.97.

Composite Market Averages

	March 5	Feb. 27	One Month Ago (Feb., 1932)	Three Months Ago (Dec., 1931)	One Year Ago (March, 1931)	Ten Years Ago (March, 1922)
Iron and Steel Composite	$29.53	$29.53	$29.56	$30.32	$31.66	$32.97
Finished Steel Composite	46.82	46.82	46.72	47.74	49.42	49.75
Steelworks Scrap Composite	7.97	7.97	7.89	8.22	10.39	11.16

Iron and Steel Composite:—Pig iron, billets, slabs, sheet bars, wire rods, pipe, tin plate, nails, sheets, plates, shapes, bars. Finished Steel Composite:—Plates, shapes, bars, hot strip, nails, tin plate, pipe. Steelworks Scrap Composite:—Melting steel, compressed sheets.

Comparative Prices of Iron, Steel and Coke

Representative Market Figures for Current Week, Last Month, Three Months and One Year Ago

	March 5, 1932	Feb., 1932	Dec., 1931	Mar., 1931
PIG IRON				
Bessemer, del., Pittsburgh	$16.76	16.96	17.51	18.26
Basic, valley	15.00	15.00	15.00	16.75
Basic, eastern del., eastern Pa.	15.75	15.75	16.00	17.25
No. 2 foundry, del. Pittsburgh	16.76	16.76	17.51	18.01
No. 2 foundry, Chicago	16.50	16.50	16.60	17.50
*Southern No. 2, Birmingham	11.00	11.20	12.00	13.00
**No. 2X, Virginia furnace	18.00	18.00	18.00	18.25
**No. 2X, Eastern del. Phila.	15.76	15.76	16.01	18.26
Malleable, valley	15.50	15.50	16.10	17.00
Malleable, Chicago	16.50	16.50	16.60	17.50
Lake Superior, charcoal, del. Chi.	23.04	23.04	19.90	27.04
Gray forge, del. Pittsburgh	16.13	16.33	16.88	17.38
Ferromanganese, del. Pittsburgh	80.24	80.24	84.79	89.79

*1.75-2.25 silicon. For local delivery. Northern shipments based on $10, Birmingham. **2.25-2.75 silicon.

Delivered pig iron prices subject to 10 per cent freight surcharge, maximum 13.44c per gross ton, beginning Jan. 4, 1932.

COKE				
Connellsville furnace, ovens	2.25	2.25	2.30	2.50
Connellsville foundry, ovens	3.25	3.25	3.25	3.25
SEMIFINISHED MATERIAL				
Sheet bars, open-hearth, Youngs.	26.00	25.80	28.25	30.00
Sheet bars, open-hearth, Pitts.	26.00	26.00	28.00	30.00
Billets, open-hearth, Pittsburgh	27.00	27.00	29.00	30.00
Wire rods, Pittsburgh	37.00	37.00	35.00	36.00

	March 5, 1932	Feb., 1932	Dec., 1931	Mar., 1931
FINISHED MATERIAL				
Steel bars, Pittsburgh	1.50	1.50	1.60	1.65
Steel bars, Chicago	1.60	1.60	1.60	1.70
Steel bars, Philadelphia	1.81	1.81	1.89	1.96
Iron bars, Chicago	1.70	1.70	1.60	1.70
Iron bars, Chicago	1.60	1.50	1.50	1.60
Shapes, Philadelphia	1.65	1.62½	1.69½	1.78
Shapes, Chicago	1.60	1.60	1.60	1.70
Tank plates, Pittsburgh	1.50	1.50	1.50	1.65
Tank plates, Philadelphia	1.69½	1.69½	1.73½	1.88½
Tank plates, Chicago	1.60	1.60	1.60	1.70
Sheets, No. 10 blue anneal., Pitts.	1.70	1.70	1.85	1.90
†Sheets, No. 24, hot, ann., Pitts.	2.20	2.15	2.40	2.35
Sheets, No. 24, galvan., Pitts.	2.75	2.75	2.90	2.90
Sheets, No. 10 blue anneal., Chi.	1.85	1.90	2.00	2.05
†Sheets, No. 24, hot, ann., Chi.	2.35	2.35	2.55	2.50
Sheets, No. 24 galvan., Chi.	3.00	2.95	3.05	3.05
Plain wire, Pittsburgh	2.20	2.20	2.20	2.20
Wire nails, Pittsburgh	1.95	1.95	1.95	1.90
Tin plate, per base box, Pitts.	4.75	4.75	4.75	5.00

†Comparisons are with old classification No. 24 black sheets.

SCRAP				
Heavy melting steel, Pitts.	$10.25	10.25	10.25	12.90
Heavy melting steel, eastern Pa.	7.35	7.35	7.62½	10.50
Heavy melting steel, Chicago	6.75	6.80	7.50	9.75
No. 1 wrought, eastern Pa.	9.00	9.00	9.50	11.00
No. 1 wrought, Chicago	6.25	6.85	7.45	9.00
Rails for rolling, Chicago	9.50	9.85	10.00	12.00

Sheets

Mills Await Ford Orders—15,000 Tons Reported Placed—Makers Reaffirming Prices

SHEET PRICES, PAGE 51

Pittsburgh — Sheet specifications are unchanged, the absence of anticipated orders from the Ford Motor Co. continuing to restrict general automotive demand. Specifications from other leading consumers are in unchanged volume. Mills have but little opportunity to quote new prices since new business is light and few inquiries are appearing for second quarter. The market generally named is 2.20c, Pittsburgh, for hot-rolled annealed sheets, 2.85c for galvanized, and 2.90c for autobody. Sheet mill operations continue at approximately 25 per cent.

New York—A slight increase in business is noted as most mills have fixed March 10 as the closing date for consumers to get in their contract specifications for this quarter at the old price levels. It is believed that much of the tonnage now being specified will cover the needs of various consumers for possibly several weeks, with a result that no real test of the new prices may materialize much before May.

Philadelphia—Some sheet sellers report a mild improvement, others see little change. The recently adjusted price levels continue largely nominal.

Wheeling Steel Corp. has been awarded practically all miscellaneous sheet steel tonnage for the navy, several hundred tons, bids on which were opened late in January. The total was approximately $26,922.84, some items being placed delivered, various yards, and others f.o.b. works.

Bids are in on about 100 tons of miscellaneous sheets, including 82 tons of locker sheets, for the marine corps, Philadelphia.

Youngstown, O.—Sheet mills are operating at a slightly better rate than last week, due to a larger volume of specifications. No important gains in specifications have developed from the Ford Motor Co., and are not expected for a fortnight. Other consumers are taking their usual quantity of sheets, except barrelmakers who continue to lag. The recently announced price advances seem to be holding, though they will not receive a real test before ten days or two weeks.

Cleveland — Small sales at the higher price levels have been insufficient to provide a test. Mill interests have noted a slowing in the local Fisher Body Co. press rooms, Chevrolet still being influenced by Ford activity. Valley and other nearby mills have not received Ford releases, although they have in several instances tonnage allocations and await word to start rolling. It is reported, but not verified, a nearby sheet mill has received an order for 15,000 tons of full-finished from Ford. Some of the best sheet orders last week were from down-state casket manufacturers.

Cincinnati — Operations of sheet mills are lower, a reaction from light ordering from automotive sources. Demand from other users are fairly steady.

Chicago—Sheet producers in this district have opened second quarter books and have entered some business. A definite mprovement is noted in seasonal sheet roofing products in the Southwest. Orders are small but more frequent and widespread. The new prices are being tested with sales of No. 24 galvanized at 2.95c, mills. Operations are continuing at 30 to 35 per cent.

St. Louis—Sheet business in February exceeded that of January and sellers here anticipate a further gain this month. Producers report a broadening demand for all grades. Prices are steady.

Current Finished Steel Prices

Delivered prices subject to freight surcharge corrected to nearest ½c. Asterisk denotes price change this week

Steel Sheets

HOT ROLLED No. 10

Pittsburgh, base	1.55c
Gary, Ind. Harbor, base	1.65c
Chicago, del.	1.70c
New York, del.	1.90c
Birmingham, base	1.70c
Philadelphia, del.	1.86c

BLUE ANNEALED NO. 9-10

Pittsburgh, base	1.70c
Chicago, district mills	1.80c
Chicago, delivered	1.85c
Philadelphia, del.	2.01c
New York, del.	2.05c
St. Louis, delivered	2.07½c
Birmingham	1.85c
*San Francisco c.i.f.	2.30c

HOT ROLLED ANNEALED NO. 24

Pittsburgh, base	2.20c
Gary, Ind. Harbor, base	2.30c
Chicago, del.	2.35c
New York, del.	2.55c
Philadelphia, del.	2.51c
Birmingham, base	2.35c
St. Louis, del.	2.57½c
*San Francisco, c.i.f.	2.80c

GALVANIZED NO. 24

Pittsburgh, base	2.75c to 2.85c
Gary, Ind. Harbor, base	2.95c
Chicago, del.	3.00c
Philadelphia, del.	3.16c
Birmingham, base	3.00c
St. Louis, del.	3.22½c
*San Francisco, c.i.f.	3.45c

AUTOMOBILE NO. 20

Pittsburgh, base	2.90c

FURNITURE

Pitts., No. 10 heavy	2.65c
Pitts., No. 20 light	3.15c

TIN MILL BLACK NO. 28

Pittsburgh, base	2.40c to 2.50c
Gary, base	2.50c to 2.60c
St. Louis, del.	2.77½c to 2.82½c

HEAVY COLD ROLLED NO. 10

Pittsburgh, base	2.25c
Gary, Ind. Harbor, base	2.25c to 2.35c
Chicago, del.	2.30c to 2.40c
Philadelphia, del.	2.56c
New York, del.	2.60c
St. Louis, del.	2.62½c

COLD ROLLED NO. 20

Pittsburgh, base	2.75c
Gary, Ind. Harbor, base	2.75c to 2.85c
Chicago, del.	2.80c to 2.90c
Philadelphia, del.	3.06c
New York, del.	3.10c
St. Louis, del.	3.12½c

TIN AND TERNE PLATE

Per 100-pound box, Pittsburgh

Tin plate, coke base	$4.75

Long ternes, 24, unassort., 2.85c to 3.00c

Gary, Ind., base 10 cents higher

Wire Products

(Prices apply on straight carloads. Mixed and joint carloads take 10 cents higher price; pool carloads 25-cent advance; less carloads 40-cent advance.)

F.o.b. mills, 100 lb. keg

Standard wire nails	$1.95
Cement coated nails	1.95
Galvanized nails	3.95

(Per pound)

Polished staples	2.50c
Galvanized staples	2.75c
Barbed wire, gal.	2.60c
Annealed fence wire	2.35c
Galvanized wire	2.80c
Woven wire fencing, (9-11 ga.)	$55.00
(12½ ga. and lighter)	$60.00

(To Manufacturing Trade)

Plain wire, 6-9 gage	2.20c
Spring wire	3.20c

Chicago and Anderson, Ind., $1 over Pitts.-Cleve.; Duluth and Worcester, $2 higher; Fairfield, Ala., $3 higher.

Steel Plates

Pittsburgh, base	1.50c to 1.60c
Philadelphia, base	1.69½c to 1.79½c
*New York, delivered	1.80c to 1.90c
Boston, delivered	1.92c
Chicago, base	1.60c to 1.70c
Cleveland, del.	1.70½c to 1.75½c
Lackawanna, N. Y., base	1.60c to 1.70c
Birmingham, Ala., base	1.65c to 1.75c
*Coatesville, Pa., base	1.60c to 1.70c
*Pacific Coast, c.i.f.	1.80c
St. Louis, del.	1.97½c

Structural Shapes

Pittsburgh, base	1.50c to 1.60c
*Philadelphia, del.	1.65c to 1.70c
New York, del.	1.77c
Boston, del.	1.90½c
Chicago, base	1.60c to 1.70c
Cleveland, del.	1.70½c to 1.75½c
Lackawanna, N. Y., base	1.60c to 1.70c
Birmingham, Ala., base	1.65c to 1.75c
*Pacific Coast, c.i.f.	2.00c
*Do., wide flange	2.10c

Bars

SOFT STEEL

Pittsburgh, base	1.50c to 1.60c
Chicago, base	1.60c to 1.70c
Birmingham, Ala., base	1.65c to 1.75c
Lackawanna, N. Y., base	1.60c to 1.65c
*Pacific Coast, c.i.f.	2.00c
Cleveland, base	1.65c
Philadelphia, del.	1.81c to 1.91c
New York, del.	1.85c to 1.95c
Boston, del.	1.97c
Pittsburgh, cold finish	1.65c to 1.75c
Pittsburgh, forg. qual.	1.75c to 1.85c

RAIL STEEL

Chicago Heights	1.50c to 1.60c
*Eastern mills	1.10c to 1.20c
Pittsburgh	1.30c to 1.35c

IRON

Chicago, base	1.60c to 1.70c
New York, delivered	1.85c to 1.95c
Philadelphia, delivered	1.86c to 1.96c
Pittsburgh, refined	2.70c to 4.20c

REINFORCING

Pitts., billet cut lengths	1.75c
Pitts., stock lengths, mill	1.50c to 1.60c
*Chi., billet	1.75c
*Chi., rail steel	1.55c
Chi., rail steel, bridges and culvert	1.55c
*Philadelphia, cut lengths	1.86c to 1.96c
Cleveland, cut lengths	1.75c

Cold Finished Bars, Shafting

*Base Pittsburgh, Chicago, Buffalo and Cleveland	1.90c to 2.00c
Shafting, turned and ground, Pittsburgh, Cumberland, Md.	2.35c to 2.80c

Corrosion, Heat Resist. Alloys

Base, Pittsburgh

18 per cent chrome, 8 per cent nickel Sheets, 35c; plates, 31c; bars, 28c.

	A	B	C	D
Bars	19c	20.5c	23c	28c
Plates	21c	22.5c	25c	30c
Sheets	26c	27.5c	30c	35c
Hot Strip	19c	20.5c	23c	28c
Cold strip	25c	26.5c	29c	34c

Carbon 0.12 and under; no nickel. A has chrome 15% and under. B over 15/18% inc., C over 18/23% inc., D over 23/30%.

Wrought Washers

Carloads, Pitts. dist.	$6.50 to 6.75 off
Carloads, Chicago dist.	7.00 to 7.50 off

Alloy Steel

Hot Rolled—F.o.b. Mills

Alloy Quality Bars, 2.65c, mill

S.A.E.	Alloy Diff.
2000	0.25
2100	0.55
2300	1.50
2500	2.25
3100	0.55
3200	1.35
3300	3.80
3400	3.20
4100 .15 to .25 Mo.	0.50

4600 .20 to .30 Mo. 1.25-1.75 Ni.	1.05
5100 .80 - 1.10 Cr.	0.45
51.00 Cr. spring	0.20
6100 bars	1.20
6100 Spring	0.95
Cr., Ni., Van.	1.50
Carbon Van.	0.95
9250 (flats)	0.25
9250 (rds.,sq.)	0.50

Strip, Hoops, Bands

*Hot strip, to 6 in., Pitts.	1.50c
*Do, 6 1/16 to 24-in., Pitts.	1.40c
*Hot strip to 6 in. Chi.	1.60c
*Do, 6 1/16 to 24 in.	1.50c
Cooperage hoop, Pitts.	1.60c to 1.70c
Do., Chicago	1.70c to 1.80c
Cold-roll. strip, Pitts., Cleve.	1.90c to 2.00c
Worcester, 3 tons, over	2.15c

Rails, Track Material

Standard rails, mill	$43.00
Relay rails, Pitts., 20 to 45 lbs.	$21.00 to 23.00
50 to 75	18.00 to 20.00
80 to 100	24.00 to 27.00
Light rails, 25-45, mills	$34.00
Light rails, Chicago	$36.00
Angle bars, mills	2.75c
Spikes, railroad, mills	2.60c
Spikes, railroad, 7/16-in. and smaller, Pitts.	2.60c
Spikes, boat, barge, Pitts.	2.90c
Track bolts, Chicago	3.50c
Do, standard, jobbers	75 off list
Track bolts, Chicago	3.50c
Tie plate, mills	$37.00

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham, Chi. Discounts to legitimate jobbing or large consuming trade for full-case lots apply to May 10, 1930, lists.

CARRIAGE BOLTS

*All sizes, cut thread 75 off

Rolled thread ⅝ x 6 and smaller take 10 per cent lower list.

*Eagle list 75 off

MACHINE BOLTS

*All sizes, cut thread, lag screws, plow bolts, Nos. 1-2-3-7 heads, tap bolts, blank bolts, stud bolts without nuts 75 off

Tire bolts 60, 10 and 10 off

Stove bolts, 80-25-10 off in pkgs.; 80 25-10-2½ off in bulk.

Rolled thread machine bolts, ⅝ x 6 and smaller take 10 per cent lower list.

NUTS

*Semifinished 75 off

HEXAGON CAP SCREWS

Milled 80-10-10-5 off

Upset 1 in. diam. and smaller 85-10 off

SQUARE HEAD SET SCREWS

Milled 80-5 off

Upset, 1 in. and smaller 80-10-5 off

Upset, larger than 1 in. 80-5 off

Cut Nails, Chain, Piling

Cut nails, c.l. Pittsburgh 2.50c

Do. less carloads, 5 kegs or over 2.75c; less than 5 kegs, 2.90c.

Chain, BB, BBB, 9/16-1½ in.	33 1/3 off
Sheet piling, Pitts.	1.90c

Rivets

Struc., c.l., Pitts.-Cleve.	2.25c
Struc., c.l., Chicago	2.35c
7/16-in. smaller, Pitts.	70, 10 and 5 off
Chicago, Cleve.	70, 10 and 5 off

Bars

Test of Advanced Price Delayed As Users Are Well Covered—Buying Steady at Low Rate

BAR PRICES, PAGE 51

Chicago—Bar mill production leads all the heavy finished departments. This is due to deformed bar business and increased orders from western automobile partsmakers. The latter have more business scheduled after the Ford car showing. The new second quarter base price for soft steel bars is 1.70c, Chicago, but some protections still are out at 1.60c, and second quarter business is not yet being actively solicited. Short-term contract sales have shown improvement in the last few days, while specifications are up to the average of this year's volume. Alloy bar mills are producing at 30 per cent with prospects of better automotive releases.

Boston—Carnegie Steel Co. has been awarded approximately 203 tons of bars for the navy yard at Boston at 4.255c, delivered.

New York—Sellers of commercial steel bars generally are quoting 1.60c, Pittsburgh, on new business. A test of this price is expected this month, when improved tonnage is expected. Common iron bars are 1.55c to 1.65c, Pittsburgh, and dull.

Bids close March 22 on 77,000 pounds of bar rivet steel for the Brooklyn navy yard.

Philadelphia—With most steel bar buyers covered for the remainder of first quarter at 1.50c, Pittsburgh, the advance of $2 per ton is not likely to be tested until near the close of March. Specifications are steady.

Pittsburgh—Steel bars are quoted nominally at 1.60c, Pittsburgh, although a test of the market is not looked for until April. Orders still involve only small lots, while the total volume from the automotive industry is unimproved. Requirements of miscellaneous buyers are fairly steady.

Youngstown, O.—With no individual consuming line coming forward with enlarged volumes of specifications, independent steel bar mills are operating at about 30 per cent of capacity. Bar selling lags behind the usual seasonal demand from implement, automotive and concrete building trades. Lacking further test, bars range from 1.50c to 1.60c, Pittsburgh.

Cleveland—Alloy steel bar mills continue to feel repercussions of Ford Motor Co.'s failure to purchase material. This district's forging plants continue on curtailed purchasing accordingly, although 2.65c, mill base, is applied without difficulty on current light buying. Soft steel bars have been at 1.65c, base Cleveland, for a week, but no test has been made. Present contracts at $2 a ton less and lower have until April 1 to expire.

Tin Plate Prices for Export Are Advanced

Tin Plate Prices, Page 51

New York—American tin plate sellers have raised their export price 45 cents per base box. This followed a smaller increase on the part of foreign sellers recently. Domestic producers are hopeful that foreign manufacturers will make a further increase which will at least make their total advance comparable with that here.

Pittsburgh—Tin plate specifications and operations hold at the slightly improved rate noted recently. Mills are effecting some reduction in stocks, although shipments still are seasonably light. Tin plate production continues at 40 per cent, with the market remaining $4.75, Pittsburgh, per base box.

Youngstown, O.—Resumption of operations by the independent tin plate mill at Warren, O., has brought up the district rate of operations to about 50 per cent. Demand from canning interests is believed sufficient to maintain this rate for the next week or two, when the northwestern salmon canning season gets under way. Tin plate is steady at $4.75, Pittsburgh.

Cold Finished Steady As Buying Volume Holds

Cold Finished Prices, Page 51

Pittsburgh—Despite lack of formal announcement regarding the second quarter price of cold finished steel bars quotations are expected to continue on the basis of the recent 2.00c, Pittsburgh, market. Specifications are quiet and unchanged, while the outlook for better automotive demand this month still hinges largely on activities of the Ford Motor Co., whose orders so far lack improvement.

Cleveland—The present base of 1.90c to 2.00c, Cleveland, for cold-finished steel bars will continue to be quoted for second quarter. However, price announcement has not hastened buying. February shipments probably fell below those for January.

Plates

Prices Holding on Small Volume Of Business—1200 Tons Placed For Dirigible Gas Holder

PLATE PRICES, PAGE 51

Chicago—New plate buying is in such scattered lots that little volume accumulates. One producer's plate mill was down entirely last week. Municipal pipe awards bring occasional orders. Plate prices are nominal at 1.60c to 1.70c, Chicago. An eastern company is inquiring for 1000 tons for a Michigan plant. Otherwise there is an absence of inquiry.

New York—Plate prices are 1.60c to 1.70c, with the higher price nominal. The Standard Oil Co. of New York has placed 2000 tons of tank work, including plates for Quincy, Mass.

Philadelphia — The market for plates is quiet. Prices generally are 1.60c to 1.70c, base, Coatesville, Pa., with sellers usually naming the higher figure for second quarter. The Panama canal commission will open bids March 21 on a substantial tonnage of steel, mainly plates, for a dam project, approximately 350 companies figuring on various items. Other inquiry is for scattered lots.

Pittsburgh—Only small orders are occurring from leading plate consumers and inquiry points to no early improvement. Prospective barge work is fairly large while awards continue quiet. Plates continue 1.50c to1.60c, Pittsburgh.

Cleveland—The plate market shows no tendency to improve. Shipbuilding and engineering concerns have issued fewer inquiries than usual for tank tops, and virtually none has been closed. Fewer lake freighters are being refitted than last year. Plates generally are 1.50c, Pitts-

burgh, with 1.60c the market on all new business.

Contracts Placed

1200 tons, gas holder for Sunnyvale, Calif., dirigible base, to Stacey Mfg. Co., Cincinnati.

600 tons, estimated, two 25-ton revolving floating cranes mounted on steel pontoons, bureau of yards and docks, Mare Island and San Diego, Calif., to R. W. Kaltenbach Corp., Bedford, O., $155,850, bids Feb. 3.

510 tons, approximate, 85 helium storage tanks, 80 feet long, two feet outside diameter, 3/8 to 5/8-inch wall, bureau of yards and docks, naval air station, Sunnyvale, Calif.; to A. O. Smith Corp., Milwaukee.

200 tons, column guards, parcel post building, New York, to McClintic-Marshall Corp., Bethlehem, Pa.

Contracts Pending

500 tons, Panama canal commission; bids being taken.

150 tons, Roanoke Rapids, N. C.

120 tons, 1,000,000-gallon water tank, East Cleveland, O.; Petroleum Iron Works, Sharon, Pa., low at $6200; Chicago Bridge & Iron Works, Chicago, second low at $6375; Pittsburgh-Des Moines Steel Co., Pittsburgh, third at $6764. McClintic-Marshall Corp., Bethlehem, Pa., low on erection.

New Nut, Bolt Prices May Aid Specifications

Bolts, Nuts, Rivets Prices, Page 51

Pittsburgh—Some improvement in specifications for bolts and nuts it looked for as a result of the recently announced price advance. Most buyers are covered by contract and are expected to await the end of the quarter before making purchases for future requirements. Second quarter contracts are to be issued shortly quoting the new price of 75 off for bolts and nuts. Rivets continue 2.25c, Pittsburgh, for the structural grade, with small rivets 70, 10 and 5 off.

Chicago—Specifications for bolts and nuts from buyers under contract at 73, 10 and 10 off have been stimulated moderately by the advance of over 10 per cent, to 75 off, although fewer contracts were out during first quarter than usual.

Second quarter contracting has started under the new prices, and for buyers not under contract the new discount becomes effective at once. Structural and small rivets are unchanged at 2.35c and 70, 10 and 5 off. Producer operations continue at 25 per cent.

Washington—Panama canal office closes March 14 on 10,000 pounds of 5-inch steel screw spikes, 11,300 pounds of steel square-head machine bolts and 2000 pounds of machine bolt nuts.

Railroads

Southern Pacific Places 25,000 Tons Rails with Colorado and Alabama Mills—Inquiry Light

TRACK MATERIAL PRICES, PAGE 51

New York—Including 100 refrigerator cars, which, as previously noted, the Pacific Fruit Express may build in its own shops, approximately 215 freight cars are actively pending. Current awards are negligible.

Domestic freight car buying in February involves 35 cars, compared with 159 in January and 11 in December of last year. Further comparisons follow:

	1932	1931	1930	1929
Jan.	159	100	5,072	13,196
Feb.	35	50	17,027	15,944
2 mo.	194	150	22,099	29,140
March		2,166	6,118	12,023
April		2,798	1,997	8,205
May		20	1,392	7,562
June		1,910	998	5,886
July		617	1,389	341
Aug.		1,304	1,111	2,854
Sept.		703	576	4,517
Oct.		980	4,116	19,506
Nov.		35	2,621	6,361
Dec.		11	2,729	9,710
Total		10,694	45,146	106,105

Baltimore & Ohio has bought from the York Ice Machinery Corp., York, Pa., air conditioning equipment for 78 passenger cars, part of an extensive equipment program. United States Steel Products Co. is low on 5000 tie plates for the Panama Canal railroad.

Interboro Rapid Transit is inquiring for 50 to 100 subway coaches. This is a portion of 289 sought in the fall of 1930 and later withdrawn.

Philadelphia—Seaboard Air Line will open bids March 14 on its second quarter requirements of shapes and plates. Other railroads are expected to issue inquiries for their requirements shortly.

Pittsburgh—Although inquiry for rails and track material for the New York Central and Pennsylvania railroads is looked for soon the tonnage involved is expected to be substantially reduced from recent years. Other inquiry is quiet while specifications against orders maintain their recent slightly improved rate.

Cleveland — Bids closed today, March 7, on the 70-ton steel gondola cars for the Wheeling & Lake Erie railroad. Part of the Nickel Plate's pending order for spikes, tie plates and other fastenings has been placed. The Erie's order also for tracks fastenings has been closed on with several steel mills.

Chicago—Indications are that about 20,000 to 25,000 tons of the expected New York Central rail order will go to Chicago district mills. Track fastenings sales still are of consequence, about 2000 tons additional having been booked in the last week. Freight car shops are not hopeful of rolling stock orders before next autumn, but appear confident that some equipment purchases should develop then. The contemplated Santa Fe car order again has been postponed. Railroads are active in ordering air conditioning equipment. Pullman Car & Mfg. Corp. has recalled about 400 former employes at its West Pullman, Ill., works, for air conditioning work on club and dining cars for Chicago & North Western, Union Pacific, South ern Pacific and Chesapeake & Ohio, while Wabash and Rock Island also are inquiring for air conditioning equipment. Missouri Pacific railroad announces that shop work on its lines will be increased 12 per cent in the next 30 days. On the other hand, Rock Island railroad is closing some of its shop activities.

Rail Orders Placed

Southern Pacific, 25,000 tons; 13,800 tons to Colorado Fuel & Iron Co., Pueblo, Colo., and 11,200 tons to Tenenssee Coal, Iron & Railroad Co., Birmingham, Ala.

4400 tons, New York board of transportation, to Bethlehem Steel Co.

Car Orders Pending

50 to 100 subway coaches, bids asked by Interboro Rapid Transit, New York.

Semifinished Steel Prices Are Untested

Semifinished Prices, Page 61

Pittsburgh — Interest in second quarter requirements of semifinished steel is light and formal announcement of prices for that period has not been made. The market currently is receiving but little test with quotations unchanged at $27 for rerolling billets and slabs, $26 for sheet bars and $37 for wire rods.

Youngstown, O.—Billets, slabs and sheet bars continue to move slowly from mills here. Billets and slabs bring $27, Youngstown, Pittsburgh and Cleveland, while sheet bars are $26.

Structural Shapes

Southern Steel Buying Features with Texas Jobs and Atlanta Postoffice Leading —Total Awards This Week Are Highest of 1932—Prices A Shade Firmer

STRUCTURAL SHAPE PRICES, PAGE 51

New York—Structural steel demand continues dull, this territory for the time being at least having lost its lead as the leading consumer. A fair tonnage is partially active, but awaits successful financing. As a result of the low demand, 1.70c on plain material is still largely untested and 1.60c, eastern mill, still covers the bulk of shipments being made.

Buffalo — An unstated tonnage, probably in excess of 2000 tons, is in sight as additions to the Gowanda state hospital near here receive final approval of the Albany, N. Y., authorities this week. Cost is estimated at $3,900,000.

Pittsburgh—Structural steel inquiry and awards are heavier than during the past several weeks, more projects involving 1000 tons and over being noted. The market continues 1.50c to 1.60c, Pittsburgh.

Cleveland—The award of 200 tons here last week for the Industrial Rayon Corp. plant was the first industrial plant job in this district in approximately six months. The Terre Haute, Ind., postoffice has attracted 43 bidders, a Cincinnati contractor being low. The Pymatuning, Pa., dam on which C. L. Cummins Inc., Cleveland, is contractor, will be closed immediately, final tests of piling have been conducted. Near 850 tons of piling are required. Dennison university's library at Granville, O., will be revived shortly. Plain material still is 1.50c. On new business 1.60c, Pittsburgh, is being applied.

Chicago—While mills have before them numerous scattered inquiries for federal work, private structural construction shows no life. Bids will be taken March 9 for eight bridges in Illinois, totaling 1000 tons, while active bridge work and postoffice projects in nearby territory totals 12,000 to 15,000 tons. Plain material is quoted 1.60c to 1.70c, Chicago. About 1000 tons for the substructure of the St. Paul, postoffice is active, and 3000 tons will be purchased later for the superstructure. Reports are that one of the western railroads will have an important bridge program. A Chicago contractor has bought 3000 tons of shapes for the Atlanta, Ga., postoffice from Wheeling Structural Steel Co.

Philadelphia—Shapes are stronger at 1.65c to 1.70c, Philadelphia, in carlots, but still subject to test. Structural trading is decidedly dull with awards negligible. Bids on the 4000-ton Franklin memorial are expected this week. Specifications for the Thirtieth street postoffice, involving 14,000 to 18,000 tons, will likely be issued in April.

Contracts Placed

6000 tons, completion of the Rapids Blanc power project for Shawinigan Water & Power Co., to Dominion Bridge Co. Ltd., Montreal, Que.

3000 tons, postoffice, Atlanta, Ga., to Wheeling Structural Steel Co., Wheeling, W. Va.; Great Lakes Construction Co., Chicago, contractor.

2050 tons, shapes and plates, tanks, New York, for Standard Oil Co. of New Jersey, to McClintic-Marshall Corp., Bethlehem, Pa.

1885 tons, grade elimination, Austin street, Buffalo, to McClintic-Marshall Corp., Bethlehem, Pa.

1400 tons, Savanna-Sebula, Ill., bridge, to Clinton Bridge Works, Clinton, Iowa.

1400 tons, library, physics and union buildings, University of Texas, Austin, Tex., to Ingalls Iron Works Co., Birmingham, Ala.

1000 tons, plates and shapes and 200 tons of machinery for two 25-ton floating cranes for Mare Island navy yard and San Diego naval base to R. W. Kaltenbach Corp., Bedford, O.

770 tons, grade elimination, Amherst street, Buffalo, to McClintic-Marshall Corp., Bethlehem, Pa.

450 tons, sheet piling, Mays Landing, N. J., state township job, to Bethlehem Steel Co., Bethlehem, Pa. Noted in STEEL, Feb. 29 as 325 tons to unstated eastern mill.

430 tons, E. L. Presbyterian church, Pittsburgh, to McClintic-Marshall Corp., Bethlehem, Pa.

400 tons, Oklahoma bridge work and coliseum at Oklahoma City, Okla., to Capitol Steel & Iron Co., Topeka, Kans.

400 tons, infirmary, Polk, Pa., to Guibert Steel Co., Pittsburgh.

400 tons, building, Tall Cedars, Baltimore, to unstated, also 75 tons bars; Morrow Bros., Baltimore, contractors.

355 tons, transmission towers, West Virginia, for New Kanawha Power Co., to American Bridge Co., Pittsburgh.

275 tons, state bridge, Watts-Adair county, Oklahoma, to Kansas City Structural Steel Co., Kansas City, Mo.; Keliher Construction Co., Little Rock, Ark., contractor; Carter-Waters Corp., Kansas City, awarded 41 tons reinforcing bars.

273 tons, Adair county bridge, Oklahoma, to Kansas City Structural Steel Co., Kansas City, Mo.

270 tons, postoffice, Cumberland, Md., to McClintic-Marshall Corp., Bethlehem, Pa., through John Grant & Sons, Cleveland, contractors.

250 tons, concentrate mill, Picher, Okla., for Eagle-Picher Lead Co., to Muskogee Iron Works Inc., Muskogee, Okla.

245 tons, beam spans, Walters, Okla., to J. B. Klein Iron & Foundry Co., Oklahoma City, Okla.

230 tons, airway beacon towers, department of commerce, Washington, to International Stacey Corp., Cincinnati. Additional units may be specified later.

200 tons, plant, Industrial Rayon Corp., Cleveland, to Fort Pitt Bridge Works Co., Pittsburgh; George A. Rutherford Co., Cleveland, contractor.

200 tons, work on dams, Panáma canal zone, to Virginia Bridge & Iron Co., Roanoke, Va.

178 tons, two turntables, Cincinnati Union Terminals Co., Cincinnati, to McClintic-Marshall Corp., Bethlehem, Pa.

173 tons, Burleson-Washington bridge, Texas, to McClintic-Marshall Corp., Bethlehem, Pa.

168 tons, bridge, Rock Creek, department of public works and parks, Washington, to McClintic-Marshall Corp., Bethlehem, Pa.; W. C. Briddell Co. Inc., Baltimore, contractor. Job also takes 46 tons of reinforcing bars.

150 tons, refining plant, Savannah, Ga., to Ingalls Iron Works Co., Birmingham, Ala.

137 tons, Michigan state bridge, Diamondale, Mich., to McClintic-Marshall Corp., Bethlehem, Pa.

135 tons, home economics and architecture buildings, University of Texas, Austin, Tex., to Orange Car & Steel Co., Orange, Tex.; Robert E. McKee, contractor and engineer, El Paso, Tex., and Los Angeles, contractor.

130 tons, Brooklyn-Manhattan Transit station extension, Beverly and Cortelyou roads, Brooklyn, N. Y., to Ingalls Iron Works Co., Verona, Pa.

125 tons, widening University basculetype bridge, Seattle, to Pacific Car & Foundry Co., Seattle; Puget Sound Bridge & Dredging Co., Seattle, contractor.

110 tons, bridge over New York, New Haven & Hartford railroad, Needham, Mass., to American Bridge Co., Pittsburgh.

110 tons, workhouse, New Castle coun-

Awards Compared

	Tons
Awards, week ended Mar. 4	24,299
Awards, week ended Feb. 27	6,732
Awards, week ended Feb. 20	12,791
Awards, this week in 1931	40,546
Av. weekly awards, 1931....	34,236
Av. weekly awards, 1932	14,697
Av. weekly awards, Feb.	11,688
Total awards to date, 1931	282,270
Total awards to date, 1932	146,969

ty, Delaware, to Belmont Iron Works, Philadelphia.

100 tons, shapes and bars, dormitory, Wheaton college, Norton, Mass., to A. L. Smith Iron Works, Chelsea, Mass., and Truscon Steel Co., Youngstown, O.; Howard M. Marshall, Boston, contractor.

100 tons, foundry addition for Filer & Stowell Co., Milwaukee, to Lakeside Bridge & Steel Co., Milwaukee.

100 tons, paper bag mill for Thilmany Pulp & Paper Co., Kaukauna, Wis., to Worden-Allen Co., Milwaukee.

100 tons, clubhouse, New Rochelle, N. Y., to Grand Iron Works Inc., Bronx, New York.

100 tons, store and office, Union, N. J., to Elizabeth Iron Works, Elizabeth, N. J.

100 tons, building, McKeesport, Pa., to McClintic-Marshall Corp., Bethlehem, Pa.

100 tons, cell block, Dannemora prison, Dannemora, N. Y., to Lackawanna Steel Construction Co., New York.

100 tons, shapes and bars, milk plant, Sheffield Co., Vergennes, Vt., to F. G. Schaeffer Iron Works, Edgewater, N. J.

100 tons, shapes and bars, postoffice, Wellsville, N. Y., to Bethlehem Fabricators Inc., Bethlehem, Pa., and Buffalo Steel Co., North Tonawanda, N. Y.; Earl E. Garber & Co., Bethlehem, Pa., contractor.

100 tons, boiler plant for Sunnyvale, Calif., dirigible base to unnamed interest; Robert E. McKee, Los Angeles, contractor.

Contracts Pending

8000 tons, addition, postoffice, Washington; bids March 29.

2000 tons, capitol building, Bismarck, N. Dak.; plans prepared.

1000 tons, substructure for St. Paul postoffice; bids March 3.

1000 tons, highway bridge, Oregon City, Oreg.

900 tons, sheet piling, Pymatuning dam, Jamestown, Pa.; C. R. Cummins Inc., Cleveland, contractor. About to be closed.

900 tons, plant building for undisclosed mining company, Carlsbad, N. Mex.

800 tons, postoffice, Terre Haute, Ind.; David Gordon Building & Construction Co., Cincinnati, low, including demolition of present buildings.

800 tons, bridge, Knights Landing, Calif., for Sutter and Yolo counties; plans being prepared.

700 tons, postoffice, Sioux City, Iowa.

600 tons, Episcopal church hospital, Front street and Lehigh avenue, Philadelphia.

500 tons, power plant, Minneapolis.

500 tons, dredge for United States engineers, Galveston, Tex.; Ingalls Iron Works Co., Birmingham, Ala., low.

425 tons, highway bridge, Valentine, Nebr.

325 tons, highway bridge, Geyserville, Calif.

300 tons, plant, Mannington Mills Inc., Salem, N. J.

300 tons, hospital, Norristown, Pa.

300 tons, highway bridge, McCook, Nev.

250 tons, garage, Akron, O.

225 tons, engineering building, University of Texas, Austin, Tex.

200 tons, bridge over Erie railroad, Belvidere, N. Y.

110 tons, hospital, Danville, Pa.; revised.

100 tons, postoffice, Pocatello, Idaho; Tapager Construction Co., Albert Lea, Minn., low.

Concrete Bars

St. Paul Postoffice to Take 1000 Tons — Almost 1000 Tons Bought at Washington —Small Government Jobs Predominate — Price Shading Still Apparent

REINFORCING BAR PRICES, PAGE 51

Chicago—Aside from postoffices, little fresh business has come before the market. About 1000 tons will be bought for the St. Paul postoffice, but only 300 tons for the substructure is active now. Bids have been rejected for the 400 tons for the Kalamazoo, Mich., filtration plant. Several state hospitals, totaling about 700 tons, will be postponed undefinitely because of lack of Illinois tax money. Both billet and rail steel bars have been shaded in recent public works bids, particularly when competition from widespread areas have been encountered.

Boston—Reinforcing bar lettings are few. With curtailment in bridge, highway and public work construction, inquiry is small, although some seasonal gain is expected in March. Prices are firmer on current business, but untested on sizable shipments.

New York—While efforts are being made to strengthen concrete reinforcing bars to 1.95c, mill lengths, New York, little volume is active to give the market a test. Several New York city jobs continue held up. Close to 1000 tons have been placed for building projects at Washington. Active pending tonnages is confined almost entirely to public work with private construction taking but a few small lots.

Philadelphia — Reinforcing bars continue unsettled at 1.40c to 1.50c, Pittsburgh mill, with the usual differential of $5 a ton shaded on cut lengths. Outstanding is the award of 400 tons for the Coatesville, Pa., sewage plant to Kalman Steel Corp., Bethlehem, Pa.

Pittsburgh—Small lots still predominate in bar inquiries and awards. Activity in this district is quiet and little improvement is in early prospect. Mill lengths of billet bars usually are quoted 1.60c, Pittsburgh, with some shading still noted in certain districts.

Awards Compared

	Tons
Awards, week ended Mar. 4	**6,197**
Awards, week ended Feb. 27	**2,320**
Awards, week ended Feb. 20	**4,401**
Awards, this week, 1931	**11,291**
Av. weekly awards, 1931.....	**6,808**
Av. weekly awards, 1932.....	**5,507**
Av. weekly awards, Feb......	**3,327**
Total awards to date, 1931	**68,948**
Total awards to date, 1932	**55,071**

Contracts Placed

850 tons, foundation, Archives building, Washington, to Capital Fireproof Products Corp., Rosslyn, Va.; F. L. Cranford Inc., Brooklyn, N. Y., contractor.

800 tons, library, physics and union buildings, University of Texas, Austin, Tex., to Concrete Engineering Co., Omaha, Nebr.; P. O'B. Montgomery, builder and engineer, Dallas, Tex., contractor.

500 tons, Rufus King high school, Milwaukee, to Concrete Steel Co., New York.

400 tons, exchange building, Chicago, for Illinois Bell Telephone Co., to unstated.

400 tons, home economics and architecture buildings, University of Texas, Austin, Tex., to Concrete Engineering Co., Omaha, Nebr.; Robert E. McKee, contractor and engineer, El Paso, Tex., and Los Angeles, general contractor.

400 tons, sewage disposal plant, Coatesville, Pa., to Kalman Steel Corp., Bethlehem, Pa.

350 tons, Newark, N. J., to unstated.

300 tons, geology and dormitory buildings, University of Texas, Austin, Tex., to Concrete Engineering Co., Omaha, Nebr.; Christy-Dolph Construction Co., Dallas, Tex., contractor.

265 tons, barracks, Bolling field, Washington, to Rosslyn Steel & Cement Co., Washington; M. H. Sobel Co., Detroit, contractor.

250 tons, state bridge, Cohoes-Waterford, N. Y., to Albany Iron & Steel Co., Albany, N. Y., through Bates & Rogers Construction Co., Cleveland, contractor.

230 tons, buildings, Brooklyn, N. Y., state hospital, to Concrete Steel Co., New York, through Junion Concrete Co., contractor.

210 tons, highway work, Sonoma and Mendocino counties, Calif., to Truscon Steel Co., Youngstown, O.

206 tons, highway work, San Diego and Imperial counties, Calif., to unstated.

200 tons, postoffice, Long Beach, Calif., to Soule Steel Co., Los Angeles, through Lindgren & Swinerton Inc., Los Angeles, contractor. Reported to unstated in STEEL Feb. 29.

170 tons, postoffice, Cumberland, Md., to McClintic-Marshall Corp., Bethlehem, Pa., through John Grant & Son Cleveland, contractor.

(*Concluded on Page 59*)

Strip

Steady Demand but Increased Buying Awaits Automotive Needs—Expect No Price Change

STRIP PRICES, PAGE 51

Pittsburgh—Strip demand is fairly steady although lacking the improvement looked for in orders from the Ford Motor Co. Partsmakers for this interest have increased their requirements of specialty grades, such as rustless steel, but no change is noted in orders for other material. Interest in future requirements is slight and producers are not actively pushing second quarter contracting. The market continues 1.50c to 1.55c and 1.40c to 1.45c for hot strip. Cold-rolled strip is quoted 2.00c for second quarter, with 1.90c prevailing on former business. Some mills continue to run only alternate weeks, the average holding around 20 to 25 per cent.

Philadelphia—Steel strip buying shows little increase, with 2.00c, Pittsburgh, for cold-rolled beginning to be effective. Hot-rolled strip is unchanged at 1.40c and 1.50c, Pittsburgh.

Youngstown, O.—Resumption of operations at the Warren, O., mills this week has brought strip steel production in the valley district close to 50 per cent. No unusual automotive orders have come in. Other consumers of hot-rolled strip are taking usual small lots and with continued caution, but cold-rolled demand is no more encouraging as to volume. Quotations generally are unchanged.

Cleveland—An unexpected price development took place in the hot-rolled strip market last week when 1.40c and 1.50c were generally withdrawn. Meantime there are no prices to the hot strip user who wants to buy for March. All inquiries are being referred to the mill in this interval. Luckily, interest is far from widespread for second quarter. It is expected that 1.45c and 1.55c, Pittsburgh, probably will be announced for second quarter, or $1 a ton up. Cold-rolled strip is being held at 2.00c, Cleveland, for second quarter.

Chicago—Hot-rolled strip producers here are expected to open second quarter books the first of the week on the basis of 1.60c, Chicago, for narrow, and 1.50c for wider sizes. This is an extension of the prices that have prevailed recently, but represents an advance of about $1 over minimum concessions that were made some time ago. Hot-rolled operations are about 25 per cent. Not much automotive business has been entered lately, but Ford buying is expected this week. Cold-rolled operations are 20 per cent. The second quarter cold-rolled price is named by local producers at 2.00c, Cleveland-Pittsburgh.

Operations Hold at 25 Per Cent of Capacity

Youngstown, O.—Twenty Mahoning valley open hearths were melting March 5, against 18 at the week's start and 14 a week ago. Thus, last week closed at 29 per cent of capacity, or up four points from the same time the preceding week.

Operations, week of Mar. 4	**25**
Operations, week of Feb. 27	**25**
Operations, week of Feb. 20	**25**
Operations, this week, 1931	**55**
High for 1932, Feb. 6	**28.5**
Low for 1932, Jan. 2	**22**

Philadelphia—Eastern steelworks operations continue at about 17 per cent, with no immediate change expected.

Buffalo — District steelworks, which suffered a drop of almost 20 points in their operations last week, probably will regain half the decline this week. It is expected that this week's production will represent about 27 per cent, following last week's fall to a fraction under 17 per cent. Preliminary schedules call for nine open-hearth furnaces to operate this week.

Pittsburgh—Ingot production averaged slightly higher during the past week, the rate being close to 25 per cent. An equal or slightly better average is looked for during the coming week. Schedules of steelworks blast furnaces are unchanged at 9 active stacks out of 54. Finishing mill schedules are steady at 25 per cent for sheets, 40 for tin plate and 20 to 25 for pipe and strip.

Cleveland—Steel ingot production closed last week at 40 per cent, the highest for 1932, an increase of 2 points over the preceding week. Fourteen of 34 open hearths were on March 5; six of seven for American Steel & Wire Co.; five of 14 for Corrigan, McKinney Steel Co.; and three of eight for Otis Steel Co.

Chicago — Ingot production this week is scheduled at 24 to 25 per cent, approximately the same as a week ago. Steelworks blast furnace output is unchanged, with nine of the district's 36 stacks in blast. Illinois Steel Co. is banking its active Joliet furnace during alternate weeks.

Birmingham—Closing of Ensley works of Tennessee Coal, Iron & Railroad Co., including rail mill, five open-hearth furnaces and two blast furnaces, reduces the district ingot rate to 29 per cent. This company has five open-hearths on at Fairfield, and Gulf States Steel Co. two at Gadsden. President Ryding, of the Tennessee company, anticipates business from railroads this month will warrant resumption of the rail mill by April 4.

Warehouse Trade Steady; Some Lines Improve

Warehouse Prices, Page 69

New York—Warehouse selling is slow, recent spotty improvement in small lots having been lost. Orders are in small shipments and not numerous. Prices are easy with recent mill announcement of advances in several products not yet reflected in any way with jobbers.

Philadelphia—Warehouse buying continues at the rate of January and February. Prices are unchanged and the situation as to sheet quantity differentials on direct shipments being clarified slowly.

Pittsburgh — Business is unchanged, February orders being about equal to those of January. Prospective price advances in sheets and bars are discussed although quotations currently are unchanged.

Detroit—Warehouse selling is at the same rate as for several weeks, but with a slight gain in some lines.

Cincinnati—Jobbers show chief interest in a number of inquiries for structurals which so far have not developed into orders.

St. Louis—Some slight betterment in demand for iron and steel from store is reported by local warehouse interests. Total volume, however, is below expectations and under the corresponding period last year.

Laclede Christy Clay Products Co., St. Louis, has reopened its St. Louis plant, closed for 6 months, re-employing 100 men.

STEEL PLATE CONSTRUCTION

McClintic-Marshall, by reason of long experience in handling all types of steel plate construction, a force of skilled workmen, and unmatched fabrication and erection facilities, is exceptionally well qualified to meet the requirements of users of steel plate work.

McClintic-Marshall Steel Stand Pipes, Elevated Water Tanks, Penstocks, Stacks, Oil Tanks, Gas Holders, High-Pressure Cylinders, Barges, and other products made of steel plate, are fabricated to customers' designs in the Leetsdale, Pa., works, the largest plant in the world devoted entirely to steel plate construction.

McClintic-Marshall's Hay works at Newark, N. J., is advantageously located to fill promptly orders for light steel plate work in the Metropolitan area.

McCLINTIC-MARSHALL CORPORATION
Subsidiary of Bethlehem Steel Corporation
General Offices: Bethlehem, Pa.

District Offices: New York, Boston, Philadelphia, Baltimore, Pittsburgh, Buffalo, Cleveland, Cincinnati, Detroit, Chicago, St. Louis, San Francisco, Los Angeles
Export Distributor: Bethlehem Steel Export Corporation, 25 Broadway, New York

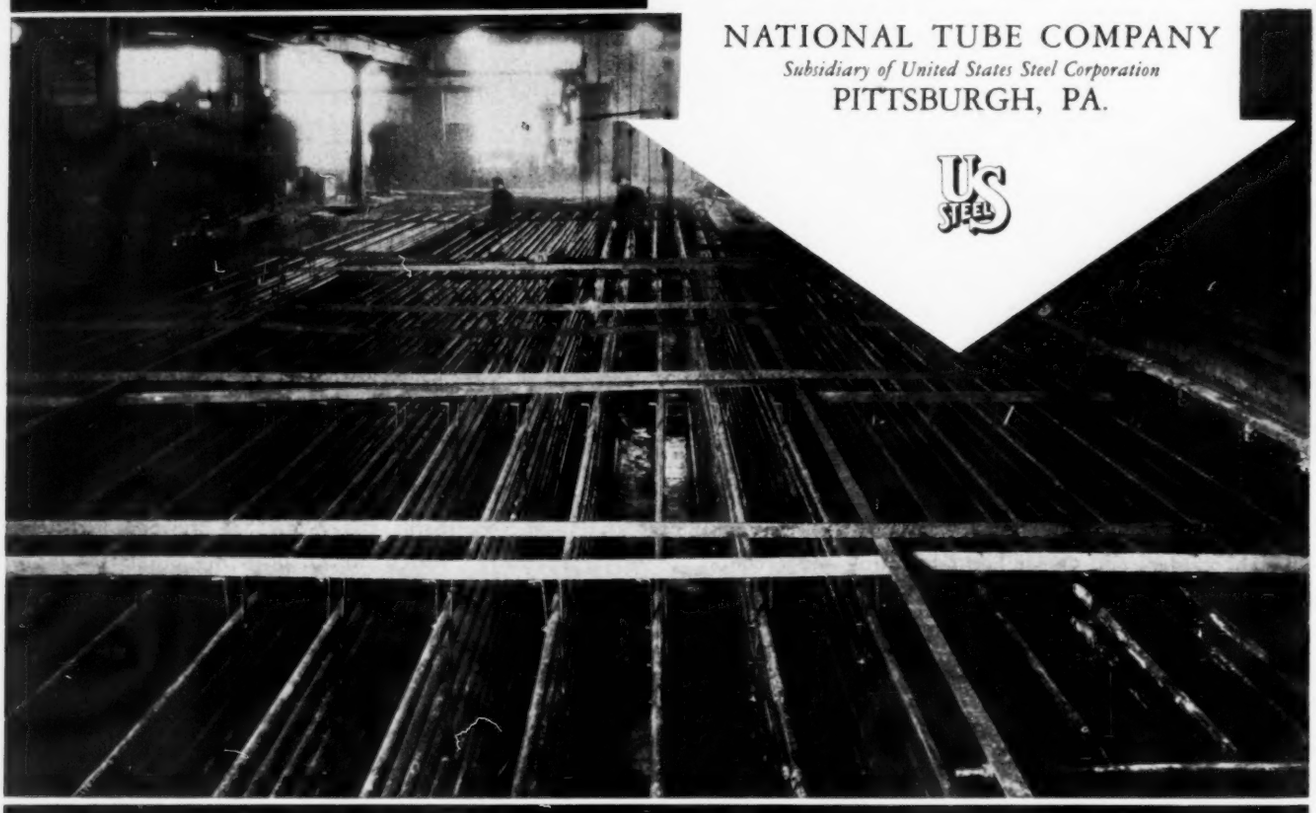
McClintic-Marshall

"In remodeling ...we used all of the original pipe"

IT was in September, 1915, that the Columbia Ice Company of Pittsburgh, installed 40,000 feet of 1¼-inch NATIONAL Pipe in their tanks.

The sixteen years that have passed in which the pipe was in continuous service, have abundantly justified their choice. For never once has trouble arisen from any deterioration of the pipe, notwithstanding the severity of the service involved; and lately when all of it had to be removed because an entirely new system had been decided on, careful inspection revealed that the material was in excellent condition. All of the original pipe was again put into service, thus confirming once more the reason why NATIONAL is—

America's Preferred Pipe for Refrigeration



NATIONAL TUBE COMPANY
Subsidiary of United States Steel Corporation
PITTSBURGH, PA.

U S STEEL

NATIONAL PIPE

Concrete Bars Placed

(*Concluded from Page* 55)

150 tons, factory for Phipps Industrial Land Trust Co., to Truscon Steel Co., Youngstown, O., through Austin Co., Cleveland, contractor.

150 tons, United States engineers, Memphis district, to Jones & Laughlin Steel Corp., Pittsburgh.

150 tons, physic building, University of Southern California, Los Angeles, to Pacific Coast Steel Corp., Los Angeles.

116 tons, warehouse for Pasadena, Calif., to Truscon Steel Co., Youngstown, O.

100 tons, bridge at Salt-air, Utah, to unstated.

Contracts Pending

400 tons, filtration plant, Kalamazoo, Mich.; bids rejected.

376 to 570 tons, postoffice, Sacramento, Calif.; N. P. Severin Co., Chicago, low.

340 tons, engineering building, University of Texas, Austin, Tex.

300 tons, substructure for St. Paul postoffice, bids March 3; 700 tons to be purchased for superstructure later.

200 tons, buildings at Stateville prison, Joliet, Ill.; bids soon.

100 tons, dam, Illinois river, Marseilles, Ill.; bids March 18.

100 tons, buildings for San Francisco Women's college, San Francisco; bids March 11.

Pipe

Municipal Projects More Active —Minneapolis Places Steel Tonnage—2325 Tons Cast, in West

PIPE PRICES, PAGE 69

New York—The resale market on merchant pipe has stiffened here, with jobbers quoting 60 off to plumbers and 62 off in trading between themselves. Until recently, as much as 64 off, the discount quoted by the mills, was being named by jobbers, a highly unsettled condition prevailing. The 250,000-ton 12¾-inch pipe line project running from the Irak petroleum fields to the Mediterranean, noted several months ago, is again active. American and European oil companies are interested, and it is believed that a portion of the tonnage will come to American pipemakers.

Cast pipe awards are small. Albany bought 600 tons of large sizes. Brooklyn Borough Gas Co. placed a small tonnage as did the Brooklyn Union Gas Co. Mount Vernon, N. Y. is inquiring for 400 tons. R. D. Wood & Co. was awarded 20,000 feet, small sizes for the local navy authorities.

Boston—Two gas companies have bought about 550 tons of cast pipe. Cambridge, Mass., closed on pipe as specified with the New England foundry. James Coughlan & Sons Inc., are low on a 60-inch steel pipe line at Newton for the Metropolitan Water commission, taking 1500 tons of plate.

Pittsburgh—Difficulties in financing are understood to be delaying action on several proposed pipe lines. Inquiries so far this year include no major projects and orders for miscellaneous material are small. Demand for standard pipe still is affected by quiet building conditions while orders for tubes and tubing generally lack improvement.

Cleveland—Demand for tubular products continues dull and unchanged. Release of a substantial tonnage is expected some time this week by a maker of mechanical tubing for the new Ford models.

Chicago—Smaller municipalities are more active in the cast pressure pipe market than the larger centers. About 1000 tons of various sizes for Cincinnati still is being held up. Millstadt, Ill., will open bids on 90,000 feet of 2 to 8-inch March 8. Aside from a few local gas company purchases, utility orders have been negligible. One of the larger utility companies in this territory has no plans for 1932 purchases. Steel pipe orders from municipalities have been more frequent. Minneapolis has formally awarded 22,000 feet of 36 and 42-inch lock-bar pipe to East Jersey Pipe Co., New York.

Birmingham, Ala.—Cast iron pipe orders are increasing, indicating larger production in the next few weeks.

Cast Pipe Placed

1325 tons, 6 and 8-inch, Class 150, San Francisco, to United States Pipe & Foundry Co., Burlington, N. J.

1000 tons, 20-inch Class 150, Signal Hill, Calif., to American Cast Iron Pipe Co., Birmingham, Ala.

900 tons, 10 to 12-inch, Flora, Ill., to unstated foundry.

600 tons, 36 and 48-inch, Albany, N. Y., to Warren Foundry & Pipe Co., Phillipsburg, N. J.

400 tons, under 16-inch, Providence Gas Co., Providence, R. I., to American Cast Iron Pipe Co., Birmingham.

300 tons, various sizes, Gloucester, Mass., to Warren Foundry & Pipe Co., Phillipsburg, N. J.

250 tons, 6 to 16-inch, Sunnyvale, Calif., federal project, yards and docks, to American Cast Iron Pipe Co., Birmingham; Meyer Rosenberg, contractor.

160 tons, small sizes, Lynn Gas Co., Lynn, Mass., to R. D. Wood & Co., Florence, N. J.

Unstated, partial 1932 needs, specified as required, Cambridge, Mass., to Warren Foundry & Pipe Co., Phillipsburg, N. J.

Unstated tonnage, 20,000 feet, small sizes, navy, New York; to R. D. Wood & Co., Florence, N. J.

3000 feet, wrought iron pipe, mainly 2-inch galvanized, Rock Island arsenal, Ill., to Greene-Wolf Co., New York.

Steel Pipe Placed

545 tons, 12-inch lap-welded pipe of British manufacture, by municipal council Richmond, B. C., to Evans, Coleman & Evans Ltd., Vancouver, B. C.

150 tons, 18-inch 12 gage welded steel pipe, Signal Hill, Calif., to Lacy Mfg. Co., Los Angeles.

100 tons, 20-inch pipe for Kansas City, to Kansas City Structural Steel Co., Kansas City.

22,000 feet, 36 to 42-inch, lock-bar pipe for Minneapolis, Minn., to East Jersey Pipe Co., New York.

Cast Pipe Pending

865 tons, 8 to 16-inch, Oakland, Calif., bids March 11.

500 tons, 6 to 12 inch, Newton, Mass.

400 tons, mainly 12-inch, Mount Vernon, N. Y.

325 tons, 6 and 8-inch, Waterford, Conn.

133 tons, 4 and 6-inch Class B, Kittitas, Wash., in market shortly.

125 tons, 12-inch pipe, improvement of Kenyon street, Seattle; new bids March 10.

Unstated tonnage, 6985 lineal feet of 8-inch and 7555 lineal feet of 6-inch class C pipe for Cedar Grove, Wis. Bids March 11.

Steel Pipe Pending

1500 tons, 60-inch, Metropolitan Water commission, Boston, for Newton, Mass.; James J. Coughlan & Son low on general contract, $121,970.

1200 tons, 28-inch welded pipe for Pacific Gas & Electric Co., San Francisco. Bids being taken.

600 tons, Greeley, Colo., no date for bids.

400 tons, penstock, Los Angeles; Consolidated Steel Corp., low on welded, and Lacy Mfg. Co., low on riveted.

100 tons, or more, steel or wrought pipe, heating contracts for Attica, N. Y., prison and Hudson river hospital, Poughkeepsie, N. Y.; Freyn Bros. of Michigan Inc., Detroit, contractor on both jobs.

Unstated tonnage, 9700 cold drawn seamless steel boiler tubes, 5600 to be 7 feet, 3 inches, 4100 to be 7 feet, 9 inches; wall 0.095-inch, navy, Brooklyn, N. Y.; bids March 8.

Unstated tonnage, 9700 boiler tubes, navy, Brooklyn, N. Y.; bids March 8.

Unstated tonnage, 7050 feet, up to 2-inch, black and galvanized wrought iron; 1110 feet, up to 2-inch, galvanized steel; bids to be closed March 15, New York department of purchase.

90,000 feet, 2 to 8-inch for Millstadt, Ill.; bids March 8.

15,000 feet, 6 to 8-inch for Cedar Grove, Wis.; bids in.

Coke Tin Plate

The high standard of quality exemplified by Weirton Coke Tin Plate shows what can be accomplished by complete ownership control of manufacturing, both mechanically and metallurgically—from ore mine to finished product.

See that your specifications call for Weirton Coke Tin Plate—for complete satisfaction.

WEIRTON PRODUCTS INCLUDE:

Pig Iron
Open Hearth Steel
Billets—Slabs—Sheet Bars—Skelp
Angles, Beams and Channels
Round, Square and Flat Bars
Rails—Steel Plates—Tie Plates—
Splice Bars
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Coke Tin Plate
Kanners Special Cokes—
Best Cokes—Charcoals
Lacquered Tinplate
Tin Mill Black Plate (All Finishes)
Lacquered Black Plate
Copper Bearing Terne Plate

Hot and Cold Rolled Strip Steel
and
Strip Steel Sheets

High Finish Sheets
Long Terne Sheets
(Common and Special Finishes)

Galvanized, Black and Blue
Annealed Sheets
Corrugated Sheets, V Crimp
Sheets, Roll Roofing

Single Pickled, Full Finished
and Auto Body Sheets

Coke—Tar—Benzol—Toluol—
Ammonium Sulphate

SAVE WITH STEEL

WEIRTON STEEL CO.

Division of National Steel Corporation

WEIRTON W. VA.

SALES OFFICES IN ALL PRINCIPAL CITIES

Raw Material Prices

Delivered pig iron prices subject to 10 per cent freight surcharge, maximum 13.44c gross ton, from Jan. 4

Pig Iron

Per Gross Ton

FOUNDRY, NO. 2

Chicago furnace	$16.50
Pittsburgh, dist. fur.	16.00
Pittsburgh, delivered	16.63 to 17.13
Valley furnace	15.00 to 15.50
Cleveland fur., local del.	16.00
Philadelphia, delivered	15.26 to 15.76
Virginia furnace	17.50
Granite City, Ill., fur.	17.50
Buffalo, fur., local del.	16.00
Buff., all-rail, Boston	19.91 to 20.41
Buff., all-rail, Brooklyn	19.40 to 19.90
Buff., all-rail, Newark	17.78 to 18.28
Ala., Bir. fur., local del.	11.00
Ala., Nor. del., Bir. base	10.00
Alabama, del. Chicago	16.01
Alabama, del. St. L.	14.42
Alabama, del. Cincinnati	13.82
Ala., Phila., dock del.	15.00 to 15.25
Ala., Balt., dock del.	15.00
Alabama, New York dock	15.50
Ala., Boston dock del.	16.50 to 16.75
Tenn., Bir. base, local del.	13.00
Tennessee, del. Cinn.	13.82
Montreal, delivered	23.00 to 23.50
Toronto, delivered	22.10

FOUNDRY, NO. 2X

Buffalo, fur., local del.	16.50
Buff., all-rail, Brooklyn	19.90 to 20.40
Buffalo, all-rail Newark	18.28 to 18.78
Buff., all-rail, Boston	20.91 to 21.41
Virginia furnace	18.00
Eastern, del. Phila.	15.76 to 16.26

FOUNDRY, NO. 1X

Buffalo fur., local del.	17.50
Eastern, del. Phila.	16.26 to 16.76

MALLEABLE

Valley furnace	15.50
Cleveland fur., local del.	16.00
Pittsburgh dis. fur.	16.00
Pittsburgh, delivered	16.63 to 17.13
Chicago, furnace	16.50
Buffalo fur., local del.	15.50 to 16.00
Eastern Penna., delivered	17.76 to 19.91
Granite City, Ill., fur.	17.50
Montreal, delivered	24.00
Toronto, delivered	22.60

BASIC

Pittsburgh, district fur.	15.00
Pittsburgh, delivered	15.63 to 16.13
Eastern Penn., del.	15.50 to 16.00
Buffalo fur., local del.	15.50 to 16.00
Montreal, delivered	23.50
Valley, furnace	15.00

BESSEMER

Valley furnace	15.50 to 15.75
Pittsburgh, delivered	16.63 to 17.13
Pittsburgh, furnace	16.00

LOW PHOS.

Valley fur., standard	25.00
Philadelphia, standard	23.76 to 26.79
Copper-bear., E. Pa. fur.	21.50 to 23.00

GRAY FORGE

Valley furnace	15.00
Pittsburgh district fur.	15.50
Pittsburgh, delivered	16.13 to 16.63

CHARCOAL

Lake Superior, del. Chicago	23.04

SILVERY

Jackson County, O., fur. in per cents: 6—$18; 7—$18.50; 8—$18.75; 9—$19; 10—$19.50; 11—$20; 12—$20.50; 13—$21.50; 14—$22.50; 15—$23; 16—$24; 17—$25.50.

Pittsburgh and Buffalo furnace: 7 to 10—$19.50; 15—$23 to $24.

BESSEMER FERROSILICON

Jackson County, O., fur., in per cents: 10—$20.50; 11—$21; 12—$21.50; 13—$22.50; 14—$23.50; 15—$24; 16—$25; 17—$26.50.

Coke

Prices Per Net Ton

Beehive Ovens

Connellsville furnace	$2.25
Connellsville foundry	3.25 to 4.50
New River foundry	6.00
Wise county foundry	4.25 to 5.00
Wise county furnace	3.50 to 4.25

By-Product Foundry

Newark, N. J., del.	8.76 to 9.16
Chicago, ovens	7.50
New England, del.	10.50
St. Louis, del.	8.50
Birmingham, ovens	4.50
Indianapolis, del.	8.32
Ashland, Ky., ovens, Connell., basis	5.50
Portsmouth, O., ovens Connell., basis	5.50
Buffalo, ovens	8.00 to 8.50
Detroit, ovens	8.00
Philadelphia, del.	8.75

Iron Ore

LAKE SUPERIOR ORE

Gross ton, 51½%, Lower Lake Ports

Old range bessemer	$4.80
Mesabi bessemer	4.65
Old range nonbessemer	4.65
Mesabi nonbessemer	4.50
High phosphorus	4.40

EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic, 56-63%, contract	9.00
Copper-free low phos. 58-65%	nom.

FOREIGN ORE

Cents per units, alongside docks Atlantic ports

Foreign manganiferous ore, 45-55% iron, 6-10% man.	9.50 to 10.00
North African low phos.	8.00 to 9.00
Swedish basic, 65%	8.00
Swedish low phos.	9.00
Spanish, North African basic, 50 to 60%	7.00 to 8.50
Newfoundland fdy., 55%	8.00
Tungsten, spot and future short ton unit, duty paid.	$10.75 to 11.00
Chrome ore, 48% gross ton c.i.f.	$18.00 to 19.00

Manganese Ore

Prices, not including duty, are cents per unit; cargo lots.

Caucasian, 52-55% (nom.)	24 cents
South African, 52%	23 to 24 cents
South African, 49-51%	22 to 23 cents
South African, 44-47%	21.00 to 21.50
Indian, 48-50% (nom.)	24 cents
Brazilian, 46-48% (nom.)	20 to 21 cents

Refractories

FIRE CLAY BRICK

Per 1000 f.o.b. Works

First Quality

Pennsylvania, Ohio, Illinois, Kentucky, Maryland, Georgia, Alabama	$38.00
Missouri	35.00

Second Quality

Pennsylvania, Ohio, Illinois, Kentucky, Missouri, Maryland	25.00 to 30.00
Georgia, Alabama	30.00

SILICA BRICK

Pennsylvania	38.00
Joliet, Ill., East Chicago, Ind.	47.00
Birmingham, Ala.	50.00

MAGNESITE BRICK

Per Net Ton

9 x 4½ x 2½	$61.50

CHROME BRICK

Per Net Ton

F.o.b. shipping point	$42.50

MAGNESITE

Dead burned grain, net ton, Chester, Pa., or Baltimore bases	38.00
Domes, Chewelah, Wash., base	20.90

Semifinished Steel

Prices Per Gross Ton

BILLETS AND BLOOMS

4 x 4-inch base

Pittsburgh, open-hearth	$27.00
Pittsburgh, bessemer	27.00
Youngstown	27.00
Cleveland	27.00
Philadelphia	22.75
Chicago	28.00
Forging, Chicago	34.00 to 35.00
Forging, Pittsburgh	33.00 to 34.00
Forging, Philadelphia	38.75 to 39.75

SHEET BARS

Pittsburgh	26.00
Youngstown	25.00 to 26.00
Cleveland	25.00 to 26.00
Chicago	27.00

SLABS

Pittsburgh	27.00
Youngstown	27.00
Cleveland	27.00

WIRE RODS

Pittsburgh, Cleveland	$37.00
Chicago	36.00 to 38.00

SKELP

All grades, Pittsburgh	1.50c

Ferroalloys

(In dollars, except Ferrochrome)

•Ferromanganese, 78-82%, tidewater, duty paid	$75.00
•Ferromanganese, del. Pittsburgh	80.24
Spiegeleisen, 19-20%, domestic fur. spot†	27.00
Ferrosilicon, 50 per cent, freight all., c. l.	77.50
Do, less carload	85.00
Do, 75 per cent	126.00 to 136.00
Silicomang., 2½% carb.	105.00
2% carbon	110.00
1% carbon	115.00
(Spot prices, $5 a ton higher.)	
Ferrochrome, 60-70 chromium, 4-6 carbon, cts. lb. con. del.	10.00
Do, for spot delivery	10.50
Ferrotungsten, stand., lb. cont.	1.10 to 1.20
Ferrovanadium, 30-40 per cent, per lb. contained, on analysis	3.05 to 3.30
Ferrotitanium, c.l., prod. plant, frt. allow., net ton	137.50
Spot, 1 ton, frt., all., lb.	8.50
Do, under 1 ton	9.00
Ferrophosphorus, per ton, carload 17-19 per cent, Rockdale, Tenn., basis, (18 per cent)	91.00
Ferrophosphorus, electrolytic per ton carload, 23-25% f.o.b. Anniston, Ala., 24%	122.50
Ferromolybdenum, stand. 50-60 per cent. per lb.	0.95
Cal. Molybdate, lb. cont.	0.80
Molyte, lb. cont.	.80

†Carloads. Differentials apply to quant.
•To users of carloads to 1000 tons annually. Differentials to large users.

Fluorspar

85 and 5 per cent grade

Washed gravel, domes., net ton, del. Pitts. equiv.	$20.31
Washed gravel, import duty paid tide. gross ton	19.50

Pig Iron

Valley Prices Easier — Ford Placing Castings Orders—5000 Tons Southern Sold in Ohio

PIG IRON PRICES, PAGE 61

Pittsburgh—Pig iron sales are light, recent orders showing no improvement over quiet activity of the past 30 days. One sale of 1000 tons of bessemer iron was made in this district, the order going to a producer able to use water shipment and the delivered price reflected this situation. Prices continue nominal, being shaded on occasions to meet outside competition. The usual market is $16, Pittsburgh, for No. 2 foundry, bessemer and malleable and $15, for basic.

Boston—Pig iron sales continue small, the total for the week being estimated under 1000 tons. Foundries are operating on curtailed schedules and are not anticipating requirements. Several small lots of Indian iron have arrived and have been sold in the last ten days. Prices generally are unchanged, the local foundry grade averaging $17, furnace, although on some small truck deliveries more has been paid.

New York—Buying is comprised only of small scattered lots. Buffalo and eastern Pennsylvania foundry irons are $14.50 to $15, base, furnace.

Philadelphia — Pig iron buying still is light. A York, Pa., consumer is reported figuring on a round tonnage. Inquiry includes 300 tons of No. 2X for a Reading, Pa., melter and 225 tons of No. 2 plain and No. 2X for a Lancaster, Pa. consumer. Prices are steady.

Buffalo—Demand for pig iron continues improved over early 1932 averages. Individual purchases are small, however, and the eastern price situation is highly competitive.

Youngstown, O. — The sale of small lots aggregating several hundred tons of bessemer pig iron at $15.50 to $15.75, valley, and the willingness of others to sell at the same price, also brought down the open market quotation on malleable to $15.50; No. 2 foundry to $15.00 to $15.50, and basic remaining at $14.50 to $15. These reductions, however, do not appear to have stimulated sales. Shipments from furnaces continue small.

Cleveland—Ford has placed substantial orders for castings which will result in better demand for pig iron. The program for expenditures as announced by Ford calls for $5,000,000 worth of malleable and $4,680,000 gray iron castings. A number of foundries have shared in the preliminary releases. Pig iron shipments in general continue moderately upward, but current sales are small, and the total for the week for furnace interests with headquarters here did not exceed 4000 tons. Prices hold at $16, base, Cleveland furnace, for local delivery. For shipment in competitive districts $15, base, lake furnace, continues minimum.

Cincinnati—Prices on southern iron continue firm at $10, base, Birmingham, according to reports of the sale of 5000 tons to a Cincinnati melter. Other sales are light, with competition tending to unsettle quotations on northern iron.

Chicago—Moderate increases in the foundry melt appear likely this month. Some automotive activity is expected to increase shipments from furnaces. Sales volume is unchanged. Southern furnaces are seeking to promote the melt of southern iron through placing it on trial for experimental casting for certain work. Owing to the light business, the $16.50, Chicago, market is not tested. In several sales, the delivered price for southern pig iron has been met by local sellers of northern merchant.

St. Louis—Pig iron shipments are expected to continue upward in March. Current sales, though small, are numerous. Malleable foundries are looking forward to more liberal releases for automotive castings. Prices are steady.

Birmingham, Ala.—Melters are buying in as small lots as possible, carrying no stock on yards. Tennessee Coal, Iron & Railroad Co. blew out two blast furnaces at Ensley last week. Prices are steady.

Toronto, Ont.—Melters continue to buy hand-to-mouth, with the weekly sales volume holding at about 500 tons. Consumption is showing moderate gains.

Ferroalloy Shipments Continue Moderate

Ferroalloy Prices, Page 61

New York—Reflecting the trend of steelmaking operations, ferromanganese specifications are unchanged in volume, with $75, duty paid, the going price on lots up to 1000 tons. Domestic spiegeleisen, 19 to 21 per cent, is $27, furnace.

The Ford Motor Co. is inquiring for 500 tons of ferrochrome and 25 tons of silicomanganese.

Pittsburgh—Ferroalloys still are moving at a rate commensurate with the low level of steel production. Prices are unchanged at $75 for ferromanganese and $27 for spiegeleisen. Other prices are unchanged.

Chicago — Ferroalloys shipments are continuing at the rate of late February, but have dropped below the spurt which occurred in the early part of last month. Prices are unchanged.

Wire Buying Increases Slowly but Steadily

Wire Prices, Page 51

Chicago—Specifications for merchant wire products have gained moderately each week since about the middle of January. Second quarter books are open but virtually no business has been placed. While first quarter prices have been extended for second quarter, no recent tests have been given. Only a small portion of the first quarter contract business has been ordered out. Manufacturers' wire continues slow at 2.22c, Chicago or western mills.

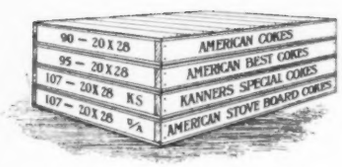
Worcester, Mass.—The market is holding its slight recent gain, although the upturn is slight. Some quickening of inquiry for seasonal demands has been noticed. Production schedules have not been materially increased. Plain bright wire to dealers is 2.30c, base, Worcester.

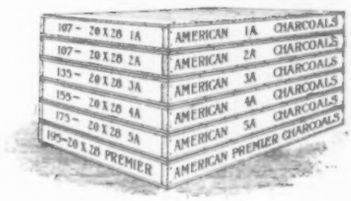
Philadelphia—Nails and wire are moving in restricted volume. Prices continue at $1.95 for nails and 2.20c, Pittsburgh, for wire and apparently these prices will apply to second quarter contracts.

Pittsburgh—Business in wire products is tending upward despite the absence of a marked changed in demand for any material. Manufacturers' wire consumption continues light but miscellaneous orders are slightly heavier than a month ago. Formal announcement of second quarter prices is yet to be made although no change is looked for from present quotations of $1.95 for carload lots of wire nails, 2.20c for plain wire and $37 for wire rods.

Buffalo—Many communities are planning to curtail road building programs this year. This will reduce demand for welded mesh. Other wire demand has shown improvement of a seasonal nature.

AMERICAN BRIGHT TIN PLATES


90 – 20 X 28
AMERICAN COKES
95 – 20 X 28
AMERICAN BEST COKES
107 – 20 X 28 K.S.
KANNERS SPECIAL COKES
107 – 20 X 28 S/A
AMERICAN STOVE BOARD COKES


107 – 20 X 28 1A
AMERICAN 1A CHARCOALS
107 – 20 X 28 2A
AMERICAN 2A CHARCOALS
135 – 20 X 28 3A
AMERICAN 3A CHARCOALS
155 – 20 X 28 4A
AMERICAN 4A CHARCOALS
175 – 20 X 28 5A
AMERICAN 5A CHARCOALS
195–28 X 20 PREMIER
AMERICAN PREMIER CHARCOALS

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The base of AMERICAN Coke Tin Plates is good soft steel. These plates are carefully produced and are recognized standards with Tin Plate users.

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FEDERAL SHIPB'LDG. & DRY DOCK CO.
MINNESOTA STEEL COMPANY
NATIONAL TUBE COMPANY
OIL WELL SUPPLY COMPANY
THE LORAIN STEEL COMPANY
TENNESSEE COAL, IRON & RAILROAD CO.
UNIVERSAL ATLAS CEMENT COMPANY

Pacific Coast Distributors—Columbia Steel Company, Russ Bldg., San Francisco, Calif.

Export Distributors—United States Steel Products Company, 30 Church St., New York, N. Y.

Scrap

Nominal Market Rules in Most Centers with Prices Unchanged —Some Buying of Steel Noted

Chicago — Strong resistance to lower prices has developed for steelmaking grades, while iron rolling mill scrap is being sold at further concessions. Reopening of several railway supply plants, after long shut-downs, has improved the outlook, although the tendency toward lower steelworks operations has added to the short interest. Shipments of cast borings to East Chicago docks for next season's movement to eastern lake furnace plants are being increased and the borings market holds relatively strong. Prices of iron rolling mill scrap are down 25 to 50 cents from a week ago.

Boston — Scrap shipments are light, most of the limited business being in cast grades. For shipment of textile to New Jersey points, deal-

Iron and Steel Scrap Prices

Corrected to Friday night. Gross tons delivered to consumers, except where otherwise stated

HEAVY MELTING STEEL

Birmingham	7.00 to 7.50
Boston, dealers	4.00 to 4.50
Buffalo, No. 1	8.00
Buffalo, No. 2	6.25 to 6.50
Chicago	6.75 to 7.25
Cinci., deal.	6.75 to 7.25
Cleve., No. 1	7.25 to 7.75
Cleve., No. 2	7.00 to 7.50
Det., No. 1 deal.	5.75 to 6.25
Det., No. 2 deal.	4.00 to 4.50
E. Pa. del. mill	7.00 to 7.75
N. Y. deal. R. R.	4.50 to 5.50
N. Y. deal. No. 2	3.50 to 4.00
N. Y. deal. yd.	3.50 to 4.00
Pitts. No. 1	10.00 to 10.50
St. L. No. 1 sel.	7.00 to 7.50
Federal, Ill.	6.50 to 7.00
Granite City, Ill.	6.00 to 6.50
Valleys, No. 1	10.00

COMPRESSED SHEETS

Buffalo, dealers	6.25 to 6.50
Chi. (Factory)	6.00 to 6.50
Cleveland	7.00 to 7.25
Detroit, dealers	5.75 to 6.25
E. Pa. new mat.	6.50 to 7.50
Pittsburgh	9.75 to 10.00
Valleys	9.50 to 10.00

BUNDLED SHEETS

Buffalo	5.25 to 5.50
Cinci., deal.	6.00 to 6.50
Cleveland	6.00 to 6.50
Eastern Pa.	5.50 to 6.00
Pittsburgh	8.50 to 9.00
St. Louis	3.50 to 4.00

SHEET CLIPPINGS LOOSE

Chicago	3.50 to 4.00
Cincinnati	3.50 to 4.00
Detroit, dealers	3.00 to 3.75
St. Louis	3.50 to 4.00

STEEL RAILS SHORT

Birmingham	10.50 to 11.00
Boston, dealers	4.25 to 4.75
Buffalo	10.00 to 11.00
Chicago (3 ft.)	8.50 to 9.00
Chicago (2 ft.)	9.50 to 10.00
Cinci., deal.	10.50 to 11.00
Detroit, deal.	10.50 to 11.00
Pitts. (open-hearth, 3 ft. and less)	12.00 to 12.50
St. Louis	11.00 to 11.50

STOVE PLATE

Birmingham	6.50 to 7.00
Boston, con.	4.50 to 5.00
Buffalo	8.25 to 8.75
Chicago, net	5.75 to 6.25
Cinci., deal. net	4.50 to 5.00
Det., net deal.	3.00 to 3.50
Eastern Pa.	7.00
N. Y., deal. mill	4.50 to 5.00
St. Louis	6.50 to 7.00

COUPLERS, SPRINGS

Buffalo	9.75 to 10.25
Chicago	8.00 to 8.50
Eastern Pa.	8.50 to 9.50
Pittsburgh	11.00 to 11.50
St. Louis	8.00 to 8.50

ANGLE BARS—STEEL

Chicago	7.50 to 8.00
St. Louis	7.00 to 7.50

LOW PHOSPHORUS

Buffalo, billets and bloom crops	11.00 to 11.50
Cleveland bil. and bloom crops	14.00 to 14.50
Eastern Pa.	12.00
Pittsburgh billet bloom crops	13.00 to 13.50
Pitts., sheet bar crops	13.00 to 13.50

FROGS, SWITCHES

Chicago	6.75 to 7.25
St. Louis	7.50 to 8.00

SHOVELING STEEL

Chicago	6.75 to 7.25
Cleveland	6.25 to 6.50
St. Louis	6.50 to 7.00

RAILROAD WROUGHT

Birmingham	6.50 to 7.00
Boston, dealers	7.00 to 7.50
Buffalo, No. 1	5.00 to 5.50
Buffalo, No. 2	8.00
Chicago, No. 1	6.25 to 6.70
Chicago, No. 2	6.75 to 7.25
Cinci., No. 2	6.50 to 7.00
Eastern Pa.	9.00
N. Y., No. 1, deal.	6.00 to 6.50
Pitts., No. 2	10.00 to 10.50
St. Louis, No. 1	4.50 to 5.00
St. Louis, No. 2	6.50 to 7.00

SPECIFICATION PIPE

Boston	4.00 to 4.25
Eastern Pa.	8.50 to 9.50
N. Y., deal.	5.00 to 5.50

BUSHELING

Buffalo, No. 1	6.25 to 6.50
Chicago, No. 1	5.25 to 5.75
Cinn., No. 1 dl.	4.75 to 5.25
Cinn., No. 2	3.00 to 3.50
Cleve., No. 2	4.25 to 4.50
Det., No. 1 new deal.	4.50 to 5.00
St. L., No. 1	5.00 to 6.50
Val. new No. 1	9.00 to 9.50

MACHINE TURNINGS

Birmingham	3.50 to 4.00
Boston, dealers	1.05 to 1.55
Buffalo	4.75 to 5.25
Chicago	4.00 to 4.25
Cinn., deal.	3.25 to 3.75
Cleveland	4.00 to 4.50
Detroit	3.25 to 3.75
Eastern Pa.	4.00 to 4.50
N. Y., deal.	1.35 to 1.50
Pittsburgh	7.50 to 8.00
St. Louis	2.50 to 3.00
Valleys	7.25 to 7.75

BORINGS AND TURNINGS For Blast Furnace Use

Boston, dealers	1.25 to 1.50
Buffalo	6.00 to 6.25
Cinn., deal.	3.25 to 3.75
Cleveland	6.00 to 6.25
Detroit, deal.	4.00 to 4.50
Eastern Pa.	3.00 to 3.50
N. Y., deal.	1.35 to 1.50
Pittsburgh	6.75 to 7.25

CAST IRON BORINGS

Birming., chem.	12.50 to 13.00
Birming., plain	3.50 to 4.00
Boston, chem.	5.50 to 6.50
Boston, deal.	1.05 to 1.55
Buffalo	5.75 to 6.25
Chicago	4.50 to 5.00
Cinn., deal.	3.25 to 3.75
Cleveland	6.00 to 6.25
Detroit, deal.	4.00 to 4.50
Eastern Pa.	3.00 to 3.50
E. Pa., chem.	10.00 to 11.00
N. Y., deal.	1.50 to 2.00
Pittsburgh	6.75 to 7.25
St. Louis	5.00 to 5.50

PIPE AND FLUES

Cinn., deal.	6.00 to 6.50

RAILROAD GRATE BARS

Buffalo	5.25 to 5.75
Chicago, net	5.50 to 6.00
Cincinnati	4.75 to 5.25
Eastern Pa.	7.00
N. Y., deal.	5.00 to 5.50
St. Louis	5.75 to 6.25

FORGE FLASHINGS

Boston, deal.	5.00 to 5.25
Buffalo	6.25 to 6.50
Cleve. ov. 10 in.	7.00 to 7.50
Detroit	5.00 to 5.50

FORGE SCRAP

Boston, deal.	1.50 to 2.00
Chicago	9.50 to 10.00
Eastern Pa., del.	6.75

ARCH BARS, TRANSOMS

Chicago, net	6.25 to 6.75
St. Louis	6.50 to 7.00

AXLE TURNINGS

Boston, deal.	6.75 to 7.00
Buffalo	6.75 to 7.25
Chi., steelworks	5.75 to 6.25
Cleveland	6.75 to 7.00
Eastern Pa. del.	7.00 to 8.00
Pittsburgh, O. H.	8.75 to 9.25
St. Louis	5.00 to 5.50

STEEL CAR AXLES

Birmingham	11.50 to 12.00
Boston, ship. pt.	11.00 to 11.50
Buffalo	12.00 to 12.50
Chicago	11.25 to 11.75
Eastern Pa.	14.50 to 15.00
St. Louis	11.50 to 12.00

SHAFTING

Bos., ship. pt.	10.00 to 10.50
Chicago	7.30 to 7.85
N. Y., deal.	9.00 to 9.50
St. Louis	8.50 to 9.00
E. Penna.	13.00 to 14.00

CAR WHEELS

Birming. iron	8.50 to 9.00
Boston, iron	11.00 to 12.00
Buffalo, iron	9.25 to 9.75
Buffalo, steel	9.75 to 10.25
Chicago, iron	7.00 to 7.50
Chi., rolled steel	8.50 to 9.00
Cincinnati, iron	9.00 to 9.50
E. Pa. steel	8.50 to 9.00
E. Pa. iron	10.00 to 11.00
Pitts. iron	10.00 to 10.50
Pitts., steel	11.00 to 11.50
St. Louis, iron	7.00 to 7.50
St. Louis, steel	6.50 to 7.00

NO. 1 CAST SCRAP

Birmingham	8.00 to 9.00
Buffalo (Mach.)	9.50 to 10.00
Buffalo, cupola	8.50 to 9.00
Boston, textile	7.00 to 8.50
Chicago, mach.	8.40 to 8.95
Chi., railroad	7.00 to 7.55
Chicago, agri.	6.45 to 7.00
Cinn., mach. cup	10.00 to 10.50
Cleve. cupola	10.00 to 10.50
Det., net deal.	8.00 to 8.50
E. Pa. cupola	10.00 to 11.00
N. Y. cup. deal	7.00 to 7.50
N. Y., del. local foundries	11.00
Pitts., cupola	9.50 to 10.00
San Fran., del.	13.50 to 14.00
Seattle	5.00 to 7.50
St. L. No. 1 ma.	7.00 to 7.50
St. L., No. 1	6.50 to 7.00

HEAVY CAST

Boston	6.00 to 6.50
Bost. mach. cast	8.00 to 9.00
Buffalo, break	8.00 to 8.50
Cleve., break	6.00 to 6.50
Detroit, auto, net deal.	10.00 to 10.50
Det., break., dl.	4.75 to 5.25
Eastern Pa.	9.00
N. Y. break, dl.	5.75 to 6.00
N. Y. No. 1 dl.	7.00 to 7.50
Pittsburgh	8.00 to 8.50

MALLEABLE

Boston R. R.	8.50 to 9.00
Buffalo	9.50 to 10.00
Chicago, agri.	6.50 to 7.00
Chicago, R. R.	6.75 to 7.25
Cinci., R. R. del.	8.75 to 9.25
Cinci., agri. del.	8.50 to 9.00
Cleveland, rail	10.00 to 10.50
Det. auto deal.	9.00 to 9.50
St. Louis, rail	5.50 to 6.00

RAILS FOR ROLLING 5 feet and over

Birmingham	9.25 to 10.00
Boston, deal.	6.00 to 7.00
Buffalo	8.50 to 9.00
Chicago	9.50 to 10.00
Eastern Pa.	10.00 to 10.50
New York	6.25 to 6.75
St. Louis	9.00 to 9.50

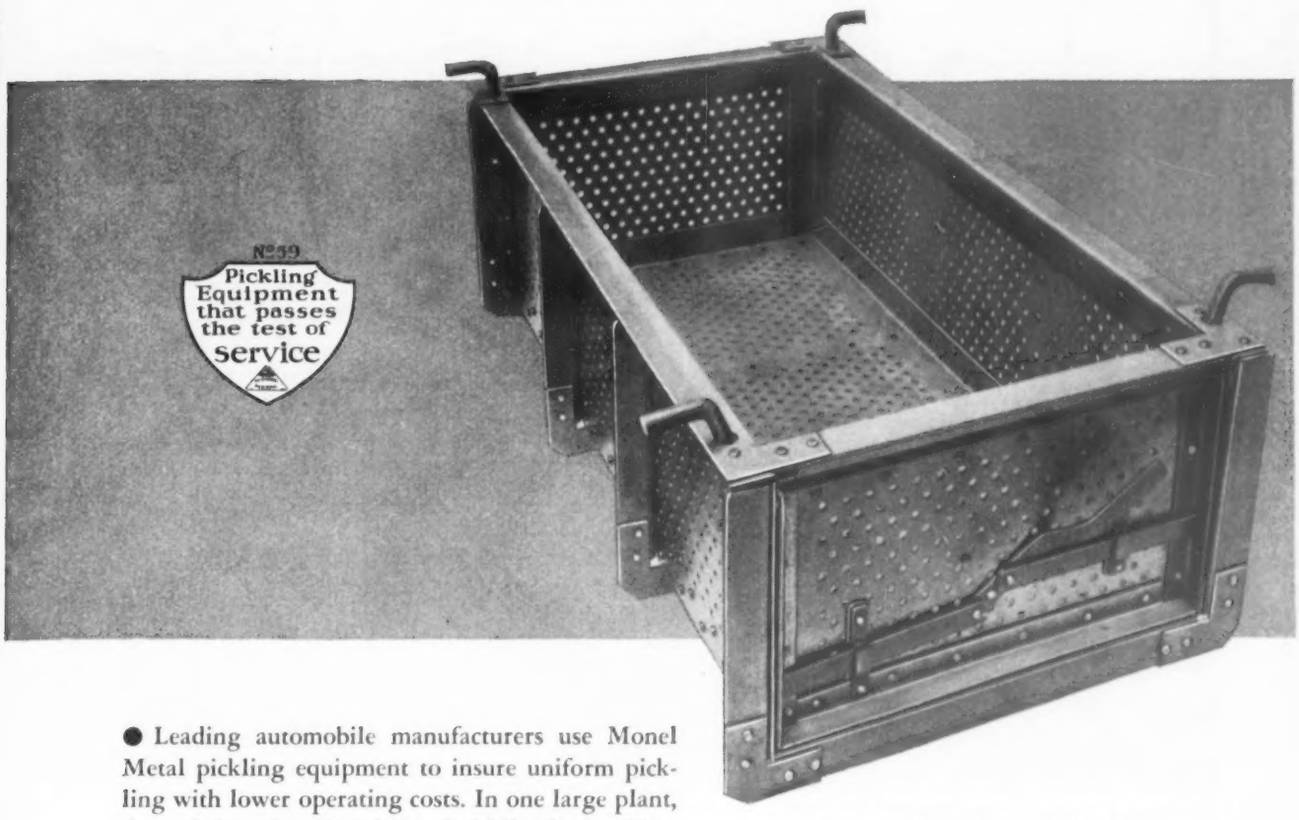
LOCOMOTIVE TIRES

Chicago, cut	8.00 to 8.50
St. L., No. 1	8.00 to 8.50

LOW PHOS. PUNCHINGS

Chicago	9.50 to 10.00
Buffalo	10.00 to 11.00
Eastern Pa.	11.00
Pittsburgh	6.75 to 7.25

MONEL METAL PICKLING BASKETS INSURE CLEAN STEEL FORGINGS *at low cost!*



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The use of Monel Metal pickling equipment insures surfaces which are free of forging scale and other undesirable deposits which hinder accurate inspection. Clean surfaces are necessary to reveal flaws, folds and similar defects which otherwise consume valuable machining time. Monel Metal equipment facilitates the removal of gritty oxide scale which shortens the life and impairs the accuracy of machine tool cutting edges.

Such results are assured by Monel Metal's high corrosion-resistance. Monel Metal is practically unaffected by pickling solutions, in contrast to weaker metals which are more rapidly attacked by acids and alkalies. Monel Metal also offers the advantages of great strength and uniform rolled structure... two properties which insure long equipment life and lowest maintenance costs.

Write for further information about Monel Metal equipment in modern pickling service.

One of six end-dumping Monel Metal baskets for pickling steel auto forgings at the Dodge Brothers plant of Chrysler Corporation, Detroit. Size 62" long by 30" wide by 18" deep. Fabricated from 3/16" and 1/4" Monel Metal sheet. Designed and constructed by Kirk & Blum, Cincinnati, Ohio.

INCO MONEL METAL

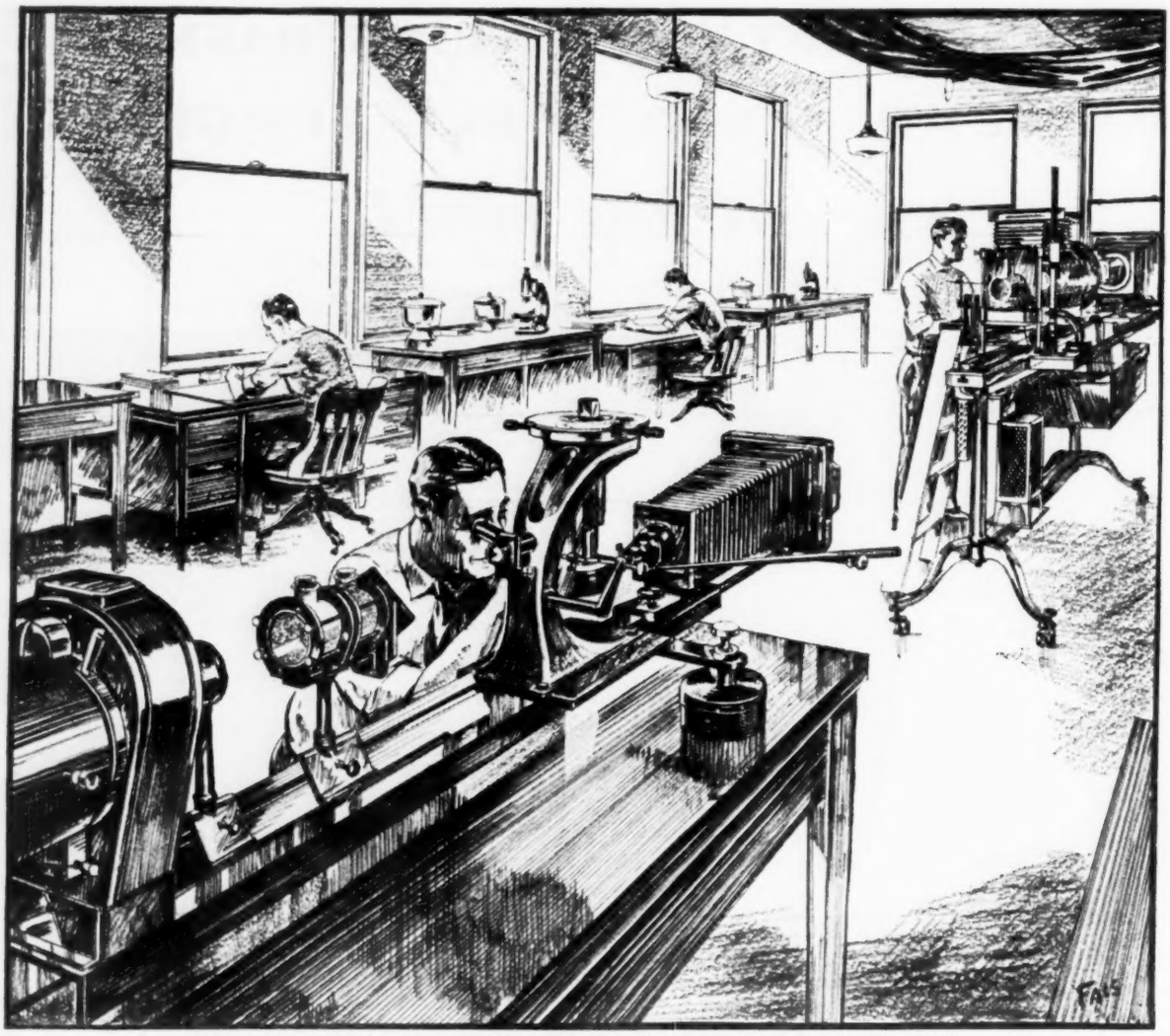
Monel Metal is a registered trade mark applied to a technically controlled nickel-copper alloy of high nickel content. Monel Metal is mined, smelted, refined, rolled and marketed solely by International Nickel.

A HIGH NICKEL ALLOY

MONEL METAL

NICKEL ALLOYS PERFORM BETTER LONGER

THE INTERNATIONAL NICKEL COMPANY, INC., 67 WALL STREET, NEW YORK, N. Y.



No. 15 of a series of advertisements on "How Superlative Quality is Built into Roebling Wire Rope". Above is shown a view of the Metallography Section of the Roebling Research Laboratory.

The New Roebling Research Laboratory

The new Roebling Laboratory is one of the country's most modern and completely equipped industrial research units.

An unending stream of problems flows to this busy beehive of research and its facilities are equal to all. There are laboratories devoted to general physical testing, to metallurgy, to metallography, and to research on welding wire and electrical wires and cables. Then, too, there is an experimental wire mill developed by Roebling engineers. Equipment is complete even to air-conditioned rooms, where the effects of temperature and humidity on various materials and products may be studied.

Here, in this research laboratory, goes on the ceaseless work of improving Roebling Wire Rope and other products. Materials are analyzed. Service conditions are exhaustively studied and better ways of meeting them are evolved. New manufacturing processes are developed and tested.

There is no standing still at Roebling.

JOHN A. ROEBLING'S SONS CO., TRENTON, N.J.

Branches in Principal Cities — *Export Dept.: New York*

WIRE • WELDING WIRE • FLAT WIRE • COPPER & INSULATED WIRES AND CABLES • WIRE CLOTH AND WIRE NETTING

ROEBLING **WIRE ROPE**

"BLUE CENTER" STEEL

ers are reported offering $4.75, shipping point. Some barge shipments of this grade are reported to have been made from New Bedford, where mill scrapping has been active of late. There is little buying of melting steel grades. Dealers' buying prices are generally unchanged.

New York—Demand for all grades of scrap is sluggish. A few cars of No. 1 steel have moved to the Pittsburgh district from this territory where local conditions were favorable, but most of this grade is being bought for barge storage and this is retarded. Several thousand tons are now stored. New Jersey pipe foundries are buying less cast, one mill holding up shipments. Stove plate at Bayonne, N. J., brings $8, better than the strictly local price. Unbroken cast is reported to have moved to Harrisburg, Pa., for $9. Aggregate volume, however, is light with prices on some grades untested.

Philadelphia—Steel and iron scrap is nominally unchanged with trading only in small lots. Suspensions of shipments to several consuming points are still in force.

Buffalo—Demand for scrap seems to have disappeared completely. No large consumer is in the market and deliveries are being deferred at purchasers' orders. Prices are nominal.

Pittsburgh — Scrap purchases by the leading consumer recently give a more active tone to the market although prices are unchanged. Orders placed for heavy melting steel are understood to have amounted to more than 10,000 tons, some estimates being as high as 20,000 tons. Prices paid were $10.25 and $10.50. Buying still is not general, with shipments to some points suspended. Blast furnace grades are quiet although the market retains a fairly strong tone at current prices. Quotations on other grades nominally are unchanged.

Cleveland — Quotations on steel and iron scrap here and in the Valleys are unchanged, though many are nominal in absence of trading. Melt has been increased by some steelmakers and reduced by others, little net change resulting.

Detroit—Prices of steel and iron scrap are firm and unchanged with relatively little tonnage moving.

Cincinnati—Recent mill purchases of scrap have been light. Prices were not disclosed on a transaction involving an estimated 2000 tons of uncut bridge steel from a viaduct razing job here, which is being shipped outside the Cincinnati district.

St. Louis—The only break in an otherwise dull scrap market was the sale of 2000 tons of steel to an east side melter. The price was understood to be at the lowest level of the present situation. There has been some small buying of foundry and malleable scrap, mainly for prompt shipment. Some demand has developed for railroad brake shoes, which are scarce and slightly higher. Otherwise prices remain unchanged.

Birmingham, Ala.—Though melters of old material have a minimum of stock on yards, purchases of old material are small.

Toronto, Ont. — Minor improvement features demand for iron and steel scrap. It is stated that a radiator firm has an inquiry out for 100 tons of machinery cast, but no agreement has been reached on price. Competition for all new business is keen. Wrought scrap and stove plate have fair call while other iron grades are spotty.

Canadian Scrap

Dealers' Buying Prices

Per Gross Ton

MONTREAL

Iron axles	$11.00
Steel axles	10.00
Car wheels	8.00
Stove plate	8.00
Wrought pipe	2.00
Turnings	2.00
Heavy melting steel	6.00

TORONTO

Steel axles	7.00
Iron axles	7.00
Heavy melting steel	7.00
Turnings	2.00
No. 1 mach. cast (net)	9.00
Malleable (net)	7.00

I. C. C. Establishes Mileage Rates on Scrap in South

Washington—Interstate commerce commission has authorized establishment of mileage rates on iron and steel scrap, in carloads, between points in southern territory including the St. Louis group and intermediate points, without observing the long-and-short-haul provision of section 4 of the interstate commerce act.

The new scale starts at 70 cents per net ton on a minimum weight of 50,000 pounds and 55 cents for a minimum weight of 80,000 pounds for 5 miles and under. For distances from 90 to 100 miles the proposed rates are $1.90 and $1.50, respectively; for 480 to 500 miles, $4.90 and $3.90; with a maximum at 1000 miles of $8.65 and $6.90.

Coke

Prices Easier in Eastern Territory—Furnace and Foundry Requirements Continue Light

COKE PRICES, PAGE 61

Pittsburgh—Shipments of foundry coke are quiet and unchanged. The market continues $3.25 to $4.50 for beehive grades, as yet not reflecting recent weakness in other districts. Furnace coke is nominal at $2.25 with practically no buying appearing in the spot market. Domestic heating coke is moving slowly.

New York—Coke specifications are light with prices easy at $2, Connellsville, for beehive furnace, and $3 to $3.25, Connellsville, for standard grades of beehive foundry coke. Premium brands of beehive foundry are $4.50, Latrobe, Pa. By-product foundry coke is $8.76 to $9.16, delivered Newark, N. J., $10.50, New England; and $8.75, Philadelphia.

Cincinnati—Demand for by-product foundry coke is unchanged. A southern Ohio consumer has contracted for 8000 tons.

St. Louis—Coke requirements are improving slightly and shipments this month probably will exceed those of February. Contracting is under way to a limited extent. Prices are unchanged.

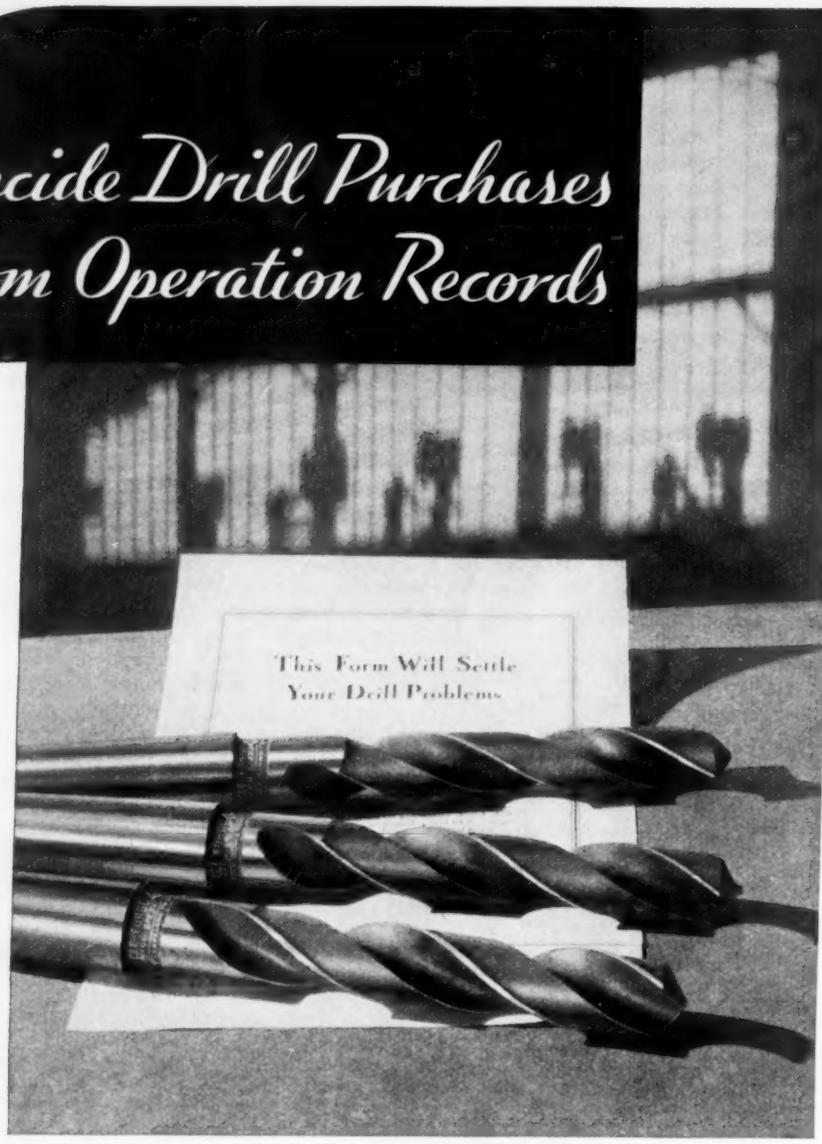
Birmingham, Ala.—Not more than 600 of the 1390 coke ovens in this district are in operation. Little new business is being reported. The price is unchanged at $4.50 for by-product foundry coke.

Mexican Production Small

Official statistics of metal production in Mexico in 1931 include 970,086 kilograms of iron, 35,901 of tungsten, 5709 of molybdenum and 2144 of vanadium. In each case a slight gain over 1930 is shown. A kilogram is 2.2 pounds.

Fletcher Enamel Co., Dunbar, Pa., plans shortly to increase its employes from 275 to 400 as a result of increased orders.

Decide Drill Purchases from Operation Records



When do you decide which make of twist drill you will use—before or AFTER a close analysis of your operation records? After all, the acid test lies in everyday performance—not in spectacular demonstrations. • To help you measure the true value of any twist drill, we have devised the "Cost-per-Hole" Drill Test Form. Through its use you banish guesswork, hunches—and place the testing of drills upon an accurate basis. • We shall be glad to send you the "Cost-per-Hole" Drill Test Form without charge or obligation. Simply use it to make your own test . . . . and be sure to include Cle-Forge High Speed Drills. . . . . We are confident you will find the result pleasing.

The CLEVELAND TWIST DRILL COMPANY
1242 EAST 49TH STREET
CLEVELAND

TRADE MARK REG. U. S. PAT. OFF. AND FOREIGN COUNTRIES

30 READE ST. NEW YORK · 9 NORTH JEFFERSON ST. CHICAGO · 654 HOWARD ST. SAN FRANCISCO
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Without obligation, send "Cost-per-Hole" Drill Test Form, with sample instruction sheet—and Cle-Forge Performance Digests

Name_____

Company_____

Address_____

© 1931 by The Cleveland Twist Drill Co.

Steel, Wrought and Cast Iron Pipe, and Tubing

Welded Iron, Steel Pipe

Base Price $200 Ton

Base Discounts on steel pipe, Pittsburgh and Lorain, O., to jobbers in carloads. Indiana Harbor, Ind., and Evanston, Ill., 2 points less. Chicago del., 2½ points less. Wrought pipe, Pittsburgh base.

BUTT WELD

	Steel			Iron	
In.	Blk.	Gal.	In.	Blk.	Gal.
½	58	44½	½	25	7
¾	62	50½	¾	30	13
1—3	64	52½	1—1¼	33	17
			1½—2	37	20

LAP WELD

2	57	45½	2	25	11
2½—6	61	49½	2½—3½	30	15
7—8	58	45½	4—6	32	19
9—10	56	43½	7—8	31	18
11—12	55	42½	9—12	28	13

BUTT WELD

Extra strong, plain ends

½	55	44½	¼ & ⅜	+11	+46
¾	60	49½	½	25	9
1—1½	62	51½	¾	30	14
2—3	63	52½	1—2	36	20

LAP WELD

Extra strong, plain ends

2	55	44½	2	31	15
2½—4	59	48½	2½—4	36	22
4½—6	58	47½	4½—6	35	21
7—8	54	41½	7—8	33	19
9—10	47	34½	9—12	23	10
11—12	46	33½			

To large jobbers these discounts on steel pipe increased on black by 1 point and two discounts of 5 per cent; on galvanized by 1½ points with two 5 per cents. Direct mill shipments, base, 5 and 2½. On iron pipe large jobbers obtain additional discount of 1 point with 5 and 2½ per cent on black and galvanized.

BOILER TUBES

Carload discounts, f.o.b. Pittsburgh

Lap Welded Steel		Charcoal Iron	
2—2¼	38	1¾	8
2½—2¾	46	2—2¼	13
3	52	2½—2¾	16
3¼—3¾	54	3	17
4	57	3¾—3½	18
4½—6	46	4	20
1½	1	4½	21

On lots of a carload or more, above base discounts subject to preferential of two 5 per cent discounts on steel and 10 per cent on charcoal iron. Smaller quantities subject to following modifications from base discounts.

Lap Welded Steel—Under 10,000 pounds, 6 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and two 5 per cents. Charcoal Iron—under 10,000 pounds, 2 points under base; on 10,000 pounds to carload, base and one 5 per cent.

STANDARD COMMERCIAL SEAMLESS BOILER TUBES

COLD DRAWN

1 inch	61	3	46
1¼—1½	53	3¼—3½	48
1¾	37	4	51
2—2¼	32	4½, 5, 6	40
2½—2¾	40		

HOT ROLLED

2—2¼	38	3¼—3½	54
2½—2¾	46	4	57
3	52	4½ 5, 6	46

Subject to 5 per cent supplementary discount for carload lots. On less than 10,000 pounds, base discount reduced 6 points. On 10,000 pounds to carload, base discount reduced 4 points and one 5 per cent allowed. No extra for lengths up to and including 24 feet. Sizes smaller than 1 inch and lighter than standard gage to be held at mechanical tubes list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

Seamless Tubing

Cold drawn; f.o.b. mill discounts

Random lengths over 5 ft. 55%
Selected lengths, 1—18 ft. 53%

Cast Iron Water Pipe

Class B Pipe—Per Net Ton

Six-inch and over, Bir.	$32.00 to 33.00
Four-inch, Birmingham	36.00 to 37.00
Four-inch, Chicago	41.40 to 43.40
Six to 24-inch, Chicago	38.40 to 40.40
Six-inch and over, N. Y.	28.00 to 30.00
Four-inch, New York	34.50 to 36.50
Stand. fittings, Bir. base	$100.00

Six to 24-inch, base; over 24-inch plus $20; 4-inch, plus $10; 3-inch plus $20; gas pipe fittings, $5 higher. Class A pipe $4 higher than Class B.

Warehouse Quotations at Leading Centers, in Cents Per Pound

(All Philadelphia prices subject to quantity differentials except reinforcing and Swedish bars)

STEEL BARS

Baltimore	2.75c
Boston	3.25c
Buffalo	3.00c
Chattanooga	3.00c
Chicago	2.75c
Cincinnati	3.00c
Cleveland	2.75c
Detroit	2.85c
Houston	2.65c
Los Ang.	3.40c
New York‡(d)	3.10c
Philadelphia	2.45c
Pittsburgh	2.60c
Portland	2.50c
San Fran.	2.40c
Seattle	2.50c
St. Louis	3.00c
St. Paul	3.00c
Tulsa	3.25c

IRON BARS

Baltimore	2.75c
Boston	3.25c
Buffalo	3.15c
Chattanooga	3.00c
Chicago	2.75c
Cincinnati	3.00c
Detroit	2.85c
New York‡(d)	3.10c
Philadelphia	2.45c
St. Louis	3.00c
Tulsa	3.25c

REINFORC. BARS

Baltimore	2.35c-3.00c
Boston	3.25c
Buffalo	2.95c
Chattanooga	3.00c
Cincinnati	3.00c
Cleveland	2.10-2.25c
Detroit	2.85c
Houston	3.00c
Los Ang. cl.	2.50c
Los Ang. lcl.	2.80c
New York	2.65c-3.10c
Phila.	2.26½c
Pittsburgh	2.60c
San Fran. cl.	2.60c
San Fran. lcl.	2.90c
Seattle	2.50c
St Louis	3.15c
Tulsa	3.25c
Young.	2.30c-2.60c

SHAPES

Baltimore	2.75c
Boston	3.35c
Buffalo	3.25c
Chattanooga	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland	2.95c
Detroit	3.10c
Houston	3.25c
Los Ang.	3.40c
New York(d)	3.10c
Philadelphia	2.45c
Pittsburgh	2.85c
Portland	2.50c
San Fran.	2.40c
Seattle	2.50c
St. Louis	3.25c
St. Paul	3.10c
Tulsa	3.50c

PLATES

Baltimore	2.75c
Boston	3.35c
Buffalo	3.25c
Chattanooga	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland, ¼-in. and thicker	2.95c
Clev., 3/16-in.	3.20c
Detroit	3.10c
Det., 3/16-in.	3.10c
Houston	3.00c
Los Angeles	3.40c
New York(d)	3.30c
Philadelphia	2.45c
Phila. floor	5.10c
Pittsburgh	2.85c
Portland	2.50c
San Fran.	2.40c
Seattle	2.50c
St. Louis	3.25c
St. Paul	3.10c
Tulsa	3.50c

NO. 10 BLUE

Baltimore	3.25c
Boston	3.50c
Buffalo	3.50c
Chattanooga	3.50c
Chicago	3.20c
Cincinnati	3.30c
Cleveland	3.00c
Detroit	3.35c
Houston	3.35c
Los Ang.	3.95c
N. Y.	3.00c
Portland	3.50c
Phila.*† (e)	2.90c
Pitts.**	3.00c to 3.10c
San Fran.	3.65c
Seattle	3.50c
St. Louis	3.45c
St. Paul	3.40c
Tulsa	3.70c

NO. 24 BLACK

Balt.*†	3.50c
Boston	4.20c
Buffalo	4.10c
Chattanooga	3.65c
Chicago	3.55c
Cincinnati	3.75c
Cleveland	3.25c
Detroit	3.50c
Los Ang.	4.70c
New York	3.50c-3.65c
Phila.*†(e)	3.40c
Pitts.**	3.40c
Portland	4.00c
San Fran.	4.15c
Seattle	4.00c
St. Louis	3.80c
St. Paul	3.545c
Tulsa	4.75c

NO. 24 GAL. SHEETS

Balt.*†	4.00c
Boston	4.75c
Buffalo	4.35c
Chattanooga	3.95c
Chicago	4.10c
Cincinnati	4.25c
Cleveland	3.75c
Detroit	4.00c
Houston	4.25c
Los. Ang.	5.10c
New York	4.00c-4.10c
Phila.*†(e)	3.75c
Pitts.**	3.90c
Portland	4.50c
San. Fran.	4.65c
Seattle	4.50c
St. Louis	4.35c
St. Paul	4.23c
Tulsa	5.10c

BANDS

Baltimore	3.25c
Boston	3.75c
Buffalo	3.35c
Chattanooga	3.20c
Chicago	2.95c
Cincinnati	3.20c
Cleveland	3.00c
Det. 3/16-in. & lighter	3.15c
Houston	3.65c
Los Ang.	4.30c
New York(d)	3.40c
Philadelphia	2.75c
Pittsburgh	2.95c
Portland	3.50c
San Fran.	3.75c
Seattle	3.50c
St. Paul	3.75c
Tulsa	3.45c

HOOPS

Baltimore	3.25c
Boston	4.90c-5.40c
Buffalo	3.90c
Chicago	3.50c
Cincinnati	3.75c
Cleveland	3.55c
Det. No. 14 & lighter	3.65c
New York	3.75c
Philadelphia	3.00c
Pittsburgh	3.60c
Seattle	4.90c
St. Paul	3.75c

COLD FIN. STEEL

Rounds & Hexagons

Baltimore (c)	3.30c
Boston	3.50c
Buffalo	3.15c
Chattanooga*	3.75c
Chicago	3.10c
Cincinnati	3.50c
Cleveland	3.10c
Detroit	3.40c
Los Ang. (a)	4.50c
New York	3.30c
Philadelphia*	3.30c
Pittsburgh	3.10c
Portland (a)	4.50c
San Fran.(a)	4.25c
Seattle (a)	4.50c
St. Paul (a)	3.85c
St. Louis	3.35c
Tulsa	4.65c

Flats and squares 50c extra, except Tulsa, where 5.14c is quoted. (a) Rounds, hex. only.

COLD ROLL. STRIP

Boston 0.100 in., 500 lb. lots	5.30c
Buffalo	5.25c
Chicago (soft) (b)	5.65c
Cincinnati	5.80c
Cleve. (b)	5.55c
Detroit	5.40c
Phila. (c)	4.55c
New York	4.55c

(b) Net base straightening, cutting, boxing 1 ton or more.

(c) Plus mill, size and quantity extras.

(d) Minus quant. diff.

(e) New mill classif.

‡Domestic bars.

*Plus quan. extras.

**Less than 25 sheets.

*†50 or more bundles.

Pacific Coast

Small Tonnages Rule—Public Work Makes Most Activity—Two Washington Mills Idle—Sales by Warehouses Hold Well—Best Buying of Year at San Francisco—Sentiment Better

San Francisco—(*By Air Mail*)—Due to the advance in intercoastal freight rates, effective Mar. 1, prices on a number of items of iron and steel products have been changed. Although the spring buying movement is not yet under way, steel mill representatives are more hopeful regarding general business conditions and expect same good tonnages being released presently. Important awards included 1325 tons of cast iron pipe for San Francisco, taken by the United States Pipe & Foundry Co., and 1200 tons of plates for a gas holder for the new dirigible base at Sunnyvale, Calif., booked by the Stacey Mfg. Co.

Bars, Plates and Shapes

Over 1200 tons of reinforcing steel bars were placed. The Truscon Steel Co. took 210 tons for highway work in Sonoma county, Calif., and 115 tons for a warehouse in Pasadena, Calif. Unnamed interests booked 206 tons for highway work in San Diego county, Calif. New inquiries include 376 to 570 tons for a postoffice at Sacramento, Calif., and 100 tons for a college building in San Francisco. No change has been made in quotations on concrete bars, out-of-stock, in the San Francisco district, 2.60c, base, on carload lots, prevailing. Los Angeles prices are weak at 1.90c. Mild steel bars are now quoted at 2.00c, c.i.f.

Plate bookings were the largest for any week so far this year and totaled 1860 tons. The Lacy Mfg. Co. took 150 tons for 18-inch welded steel pipe for Signal Hill, Calif. The Consolidated Steel Corp. was low bidder on 400 tons for a penstock for Los Angeles on the basis of welded pipe, while Lacy Mfg. Co. was low on a riveted basis. The Pacific Gas & Electric Co., San Francisco, is in the market for 42 miles of 28-inch pipe, involving more than 1200 tons. New plate prices are firm at 1.80c., c.i.f.

Structural steel awards exceeded 2300 tons. The largest letting went to R. W. Kaltenbach, Bedford, O., and called for two 25-ton floating cranes for the Mare Island and San Diego naval bases, requiring 1000 tons of plates and shapes and 200 tons of machinery. The only new inquiry of importance calls for 800 tons for a bridge at Knights-Landing, Calif. Standard shapes are now quoted at 2.00c, c.i.f., and wide flange material at 2.10c.

Other Finished Material

No action has yet been taken by the Southern Pacific Co. on its inquiry for 1932 rail requirements, 20,675 tons of 110 and 130-pound rail.

Cast iron pipe awards were the second largest weekly total of the year and aggregated 2325 tons. The American Cast Iron Pipe Co. took 1000 tons of 20-inch mono-cast pipe for Signal Hill, Calif. Oakland, Calif., will open bids Mar. 11 for 865 tons of 8 to 16-inch pipe. Beverly Hills, Calif., will open bids soon on 241 tons of 6 to 12-inch pipe.

Movement of sheets continues to be restricted to small lots for the most part. New prices are now in effect, due to intercoastal freight rate increases. No. 10 blue annealed sheets now hold at 2.30c, c.i.f.; No. 24 gage hot rolled annealed are quoted at 2.80c, and No. 24 gage galvanized sheets are priced at 3.45c, c.i.f.

Coast Pig Iron Prices

Utah basic	$22.00 to 24.00
Utah foundry	22.00 to 24.00
*German	24.25
*Indian	22.00 to 24.00

*C.i.f. duty paid.

Seattle Buying Light

Seattle—Comparatively unimportant tonnages are being awarded in the Pacific northwest. Private initiative is handicapped by lack of financial support and public works are still predominant. State of Washington has several steel bridges on its program but plans are developing slowly.

Public works awards last week totaled $614,000. Charles Weitz Sons Inc., Des Moines, Iowa, was low at $97,386 for the postoffice at Bend, Oreg. Bids are out for the federal building at Longview, Wash., plans by Bebb & Gould and John Graham, Seattle architects. The same architects are preparing plans for a proposed nurses' home for the marine hospital group at Seattle.

Bars, Plates and Shapes

Mill prices are unchanged but quotations are nominal as there is no active buying. Both local mills are idle. Pacific Coast Steel Corp. will operate its rolling mill part time in March but will not fire the open-hearth furnaces.

No awards for reinforcing materials were noted this week. Pending projects do not exceed 500 tons at present, among them 100 tons for a bridge at Bellingham and 300 tons for the Fairbanks, Alaska, postoffice.

Important plate jobs are lacking, even warehouse turnover being in unusually small lots. An eastern Washington irrigation pipe line job, 100 tons, is being held up until finances are arranged. Western Pipe & Steel Co., San Francisco, is building a number of steel storage tanks for the Hancock Oil Co., one to be erected on the company's Seattle site.

Pacific Car & Foundry Co., Seattle, has the subcontract for widening the bascule University bridge, Seattle, requiring 125 tons of shapes. Puget Sound Bridge & Dredging Co. has the general contract. Bids for the Clackamas river state highway bridge in Oregon, 1000 tons, have been postponed to March 16, opening at Portland. Pacific Car & Foundry Co. is fabricating 126 light standards for the George Washington Memorial bridge, Seattle.

Finished Materials

The warehouse trade is holding its own, business being slightly better than last month. Plates and sheets are moving in small tonnages and no item has developed activity. Prices are unchanged.

Newman Mfg. Co., Cincinnati, has a $60,000 contract to furnish bronze work on the Portland postoffice building. Spokane, Wash., will open bids March 3 for two pumping units, including a 6800 and a 600-gallon per minute pump with usual accessory equipment.

Pipe Inquiry Is Light

Evans, Coleman & Evans Ltd., Vancouver, B. C., has the contract to furnish Richmond, B. C., 13,250 feet of 12-inch lap-welded steel water pipe of English manufacture, totaling approximately 545 tons. Few pipe projects in Washington and Oregon are pending. Two local improvement jobs in Seattle, requiring small tonnages of cast iron, are up for figures but business this year has been far below expectations.

The scrap market is unchanged with practically no movement.

Ribbons of Steel That Are Measures of Profits

To cut just a little deeper, just a little faster; how often this would turn a loss into a profit in a machining operation. Perhaps the steel you are using would make the difference. Illinois Alloys can be machined rapidly, can be cut deeply because they are homogeneous and uniform in structure, as a result of production that is ever under the watchful eye of metallurgists. These metallurgists will help you solve your alloy problems.

Illinois Steel Company
SUBSIDIARY OF UNITED STATES STEEL CORPORATION
208 South La Salle Street, Chicago, Ill.

ILLINOIS *alloy* STEEL

61 YEARS SPEAK!

The Pittsburgh Rolls Corporation, exclusive mnnufacturers of iron, chill, and steel rolls since 1870, say after six months use of their new Cincinnati 24" x 120" Roll Grinder: "For removing 1/16 inch of stock all over this roll, including necks and body, and finishing to within a tolerance of .001" required 10 hours time as against 25 on our old grinder. The finish obtained is up to all requirements and without chatter marks".

Authority speaks! . . . Genuine approval of Cincinnati Roll Grinding Machines based upon their 61 years of experience, an appreciation of *dependable counsel on grinding* and *proven performance.*

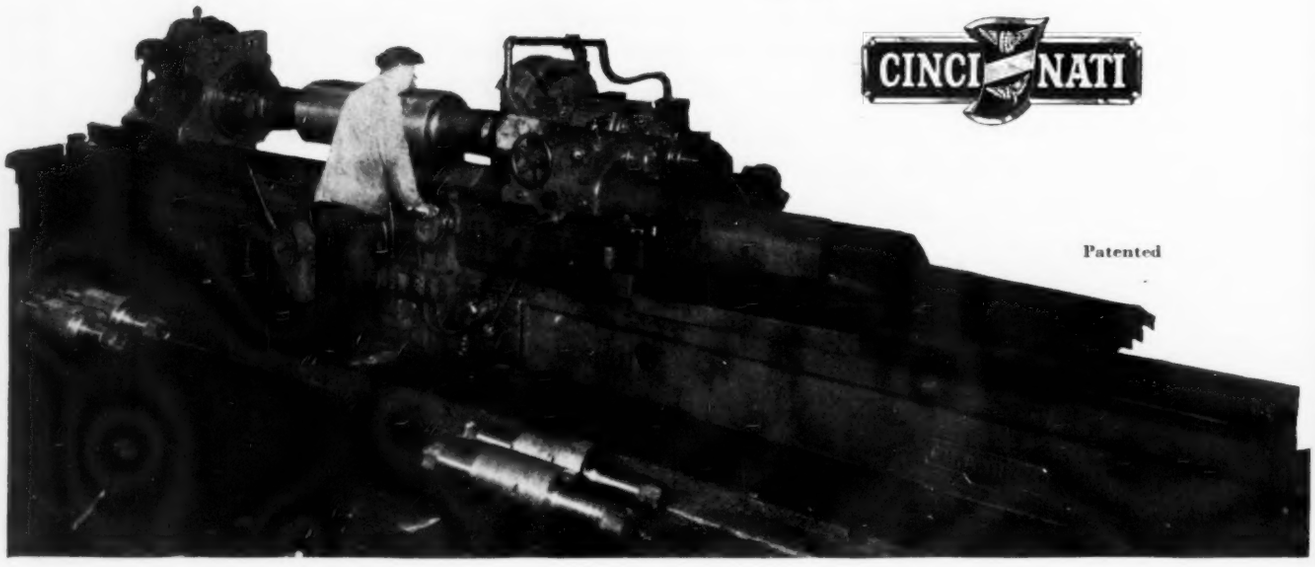
Can you match this performance in your shop? May we time study your work . . . and give you production facts?

IN 60% LESS TIME

This grinding machine rough grinds $\frac{1}{16}$" stock and finishes within .001" all over, including necks of the rolls. The rolls ground are very hard alloy iron, 18" in diameter, 8' long, with 11" diameter necks and several step-downs and grooves. Old grinding time 25 hours . . . *new time 10 hours.*

CINCINNATI GRINDERS INCORPORATED
CINCINNATI, OHIO, U. S. A.

CINCINNATI



Patented

Europe

Tin Plate Pool in Wales Will Include All Makers — British and Continental Markets Dull

London—(*By Cable*)—Pooling in the tin plate trade is being revived, to include 100 per cent of the manufacturers with the price stabilized at 16 shillings per box. The iron and steel market is devoid of encouraging features. Midland merchants are quoting Continental steel with the duty included. This makes merchant steel bars about £5 7s, delivered, but there is no business, owing to the existence of large stocks. Shipments of Middlesbrough pig iron are improving but prices of hematite iron are weak. The Continent reports markets are dull and weak.

A belt line railroad for the proposed Lake Calumet deep harbor, in the Calumet industrial district of Chicago as a part of the Lakes-to-Gulf waterway, has been recommended by the Chicago regional port commission to the federal government.

Contrary Factors Affect British Market for Steel

Birmingham, Eng.—The best news on the Birmingham market has been the announcement that the bank rate had been reduced from 6 to 5 per cent. Industry generally will welcome the change but there will have to be much more inquiry before markets regain confidence. The returns of output for January indicate a turn of the tide both in pig iron and steel ingots and castings.

Disappointment has been experienced by the announcement that the Barrow Hematite Steel Co. is to damp down two furnaces owing to shortage of orders and the large stock of iron. A few days ago the company closed down its steelworks for want of steel rail orders. The Barrow hoop works will continue to operate on hoops and strip. With the closing down of iron smelting at Barrow, production will be at a lower level than for a long time in North Lancashire and South Cumberland.

The position at Birmingham shows no development. In the steel trade contraction rather than expansion is the rule. Lack of support for small steel bars has led to further price deterioriation. The steel association maintains prices for heavy material.

Specifications for pig iron continue small. Inquiries are more numerous in Middlesbrough but this is the only area in which returning life is promised. Furnacemen in Northamptonshire and Derbyshire find it increasingly difficult to make delivery. Stocks are accumulating at furnaces. In the Barrow-in-Furness district it is estimated 100,000 tons has accumulated at furnaces in spite of the fact that only five plants out of 21 are operating.

The position with regard to Continental material is somewhat confused. Continental houses quote subject to the buyer paying whatever tariff is chargeable. Considerable tonnage has been bought already for future delivery on the basis of a 10 per cent duty and in case of this being increased buyers and sellers are taking a risk.

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, March 3

Export Prices f.o.b. Ship at Port of Dispatch—By Cable (or Radio)

	British gross tons U. K. ports		Continental Channel or North Sea ports, metric tons Gold parity, $4.8665	
PIG IRON		£ s d		£ s d
Foundry, 2.50-3.00 Silicon	$10.24	2 18 6	$ 9.72 to $10.21	2 0 0 to 2 2 0
Basic bessemer	9.80	2 16 0*	8.75 to 9.23	1 16 0 to 1 18 0
Hematite, Phos. .03-.05	11.20	3 4 0	.....	.....
SEMIFINISHED STEEL				
Billets	$18.81	5 7 6	$11.42 to $11.66	2 7 0 to 2 8 0
Wire rods, No. 5 gage	29.75	8 10 0	24.30 to 25.52	5 0 0 to 5 5 0
FINISHED STEEL				
Standard rails	$28.88	8 5 0	$28.55	5 17 6
Merchant bars	1.09c	7 0 0	.56c	2 11 0
Structural shapes	1.21c	7 15 0	.55c to .56c	2 10 0 to 2 11 0
Plates, †¼ in. or 5 mm	1.37c	8 15 0	.66c to .67c	3 0 0 to 3 1 0
Sheets, black, 24 gage or 0.5 mm.	1.37c	8 15 0	1.46c to 1.49c	6 12 6 to 6 15 0
Sheets, gal., 24 gage, corr.	1.48c	9 10 0	1.54c	7 0 0
Bands and strips	1.48c	9 10 0	.77c to .80c	3 10 0 to 3 12 6
Plain wire, base	1.33c	8 10 0	1.18c	5 7 6
Galvanized wire, base	1.72c	11 0 0	1.38c to 1.40c	6 5 6 to 6 7 6
Wire nails, base	1.72c	11 0 0	1.21c	5 10 0
Tin plate, box 108 lbs.	$ 2.80	0 16 0	$3.20	0 13 2‡

British ferromanganese $72 to $75 delivered Atlantic seaboard, duty-paid. German ferromanganese £9 0s 0d ($43.74) f.o.b.

Domestic Prices at Works or Furnace—Last Reported

		£ s d	French Francs		Belgian Francs		Reich Marks	
Fdy. pig iron, Si. 2.5	$10.24	2 18 6	$ 9.46	240	$10.32	370	$16.44	69
Basic bessemer pig iron	9.80	2 16 0*	.....	.....	8.93	320	17.98	75.50
Furnace coke	2.32	0 13 3	5.08	129	4.46	160	5.10	21.40
Billets	18.81	5 7 6	13.00	330	11.58	415	23.70	99.50
Standard rails	1.29c	8 5 0	1.41c	785	1.57c	1,210	1.37c	127
Merchant bars	1.09c	7 0 0	.90c	500	64c	490	1.24c	115
Structural shapes	1.37c	8 15 0	.99c	550	.64c	490	1.22c	112.50
Plates, †¼-in. or 5 mm	1.40c	9 0 0	1.17c	650	.76c	585	1.43c	132
Sheets, black	1.37c	8 15 0§	1.30c	720‡	.88c	675‡	1.56c	144‡
Sheets, galv., corr., 24 ga. or 0.5 mm	1.48c	9 10 0	2.43c	1,350	.....	.....	4.00c	370
Plain wire	1.33c	8 10 0	1.75c	970	1.95c	1,500	1.92c	178
Bands and strips	1.48c	9 10 0	.96c	535	.88c	675	1.44c	133

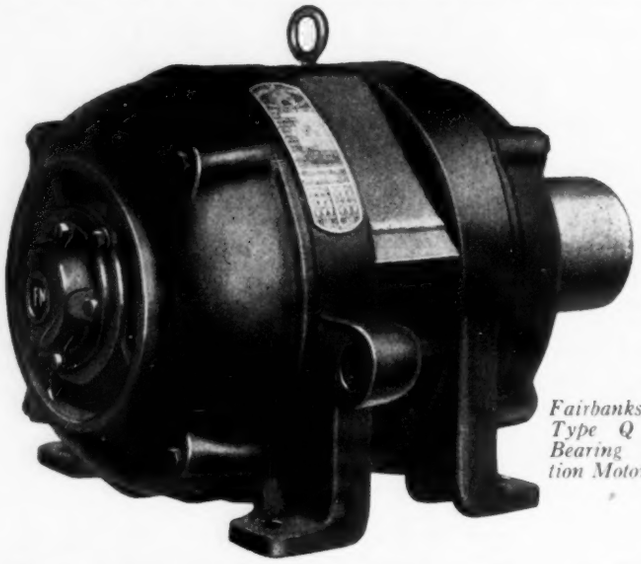
*Basic. †British ship-plates, Continental, bridge plates. §24 ga. ‡1 to 3 mm. basis price.
British quotations are for basic open-hearth steel, Continental usually for basic-bessemer steel.

French Pin Much Faith on Strength of Comptoirs

Paris—Negotiations for a new pig iron syndicate have brought about a certain firmness in price but demand remains rather limited.

Some revival has been noted in the domestic market for bars and structural shapes but this is not as considerable as would be the case in normal times. Belgian competition continues keen in many parts of France. However, the comptoir has now decided not to allow any more price concessions, as this does not seem to have much influence on the volume of orders. Therefore, the price of merchant bars is 500 francs ($19.50), and that of beams, 550 francs ($21.45). The price of semi-finished steel has hardened, and basic bessemer billets are now 300 francs ($11.70), while second-grade billets can be obtained at 240 francs ($9.35). This hardening of prices is due to the belief that the semifinished steel syndicate will shortly be reorganized, and considerable hopes are built up on the formation of this comptoir, as it will be the basis of all the other syndicates.

Mechanical excellence...



Fairbanks-Morse Type Q Ball-Bearing Induction Motor.

to match high electrical efficiency...

Fairbanks-Morse approached the problem of motor building with a dual purpose . . . First, to build motors of unusual electrical efficiency. And—equally important—to match that high efficiency with *mechanical* excellence. As a result of this policy, F-M motors have established an outstanding record of dependability and long-time service.

Ceaseless emphasis on *mechanical* improvement has led to unique construction features that contribute very definitely to F-M motor performance. F-M *sealed* ball bearing construction—incorporating "the highest priced bearings in the world"—is a distinct triumph in motor building. The permanently plastic insulation used in F-M motors retains its original qualities for years. Electrically welded zones across outer surface of stator laminations at several points, form a rotor core of extreme rigidity.

These are but a few of the mechanical superiorities that have contributed to the dependability, long life and low cost performance for which Fairbanks-Morse motors are famous. Let us send you *complete* information about F-M motors. You will find it interesting—and your request will place you under no obligation.

FAIRBANKS, MORSE & CO.

900 S. Wabash Ave., Chicago

32 branches at your service throughout the United States

FAIRBANKS-MORSE MOTORS

POWER, PUMPING AND WEIGHING EQUIPMENT

5552EA 97.29

Mill Products

Base price cents per pound f.o.b. mill except otherwise specified. Copper and brass product prices based on 6.25c, Conn., for copper

Sheets	
Yellow brass (high)	12.50
Copper, hot rolled	15.37½
Lead sheets, to jobbers	6.75
Zinc sheet (100-lb. base)	9.00
Tubes and Pipes	
Seamless yellow brass (high)	15.75
Seamless copper	14.87½
Rods	
Yellow brass (high, full turnings)	10.25
Naval brass	11.37½
Anodes	
Copper untrimmed	12.25
Wire	
Yellow brass (high)	12.50

Old Metals

Dealers' buying prices, cents lb.

No. 1 Composition Red Brass	
New York	3.25 to 3.50
Chicago	2.50 to 2.75
Cleveland	3.00 to 3.25
St. Louis	3.00
Heavy Yellow Brass	
New York	2.00 to 2.25
Heavy Copper and Wire	
New York	4.00 to 4.25
Boston	4.50 to 4.75
Chicago	2.75 to 3.00
Cleveland	3.25 to 3.50
St. Louis	3.25
Composition Brass Borings	
New York	3.00 to 3.25
Yellow Brass Tubing	
Cleveland	1.50 to 2.00
Light Copper	
New York	3.25 to 3.50
Chicago	2.25 to 2.50
Cleveland	2.75 to 3.00
St. Louis	3.00
Light Brass	
Boston	1.65 to 1.85
Chicago	1.25 to 1.50
Cleveland	1.25 to 1.50
St. Louis	1.75
Lead	
St. Louis	2.25
Zinc	
New York	1.00
Cleveland	1.00 to 1.12½
St. Louis	1.00
Aluminum	
Clippings, new, soft, Cleve.	11.00 to 11.50
Clippings, hard, Cleveland	7.50 to 9.00
Borings, Cleveland	2.75 to 3.25
Mixed cast, Cleveland	4.00 to 4.75
Mixed cast, Boston	3.25 to 3.50
Mixed cast, St. Louis	3.50 to 4.00

Secondary Metals

Remelt, aluminum No. 12	8.50 to 9.00
Brass ingots, 85-5-5-5	6.12½

Metals

Copper Falls to Record Low of 5.75c but Later Recovers Somewhat—Lead, Zinc Ease

New York—Chief interest in metals last week was centered in the copper situation. Demand for all metals domestically was dull. Copper hit a new record low but recovered somewhat later. Lead showed further weakness. Zinc and antimony both were easier. Tin was somewhat higher.

Copper—The metal was available from custom smelters during the first three days of the week at 5.75c, a new all-time low. Later in the week, however, custom interests were asking 6.00c and higher on announcement that Copper Exporters Inc. would continue indefinitely under marketing rules which existed prior to Jan. 1, 1932. Announcement that Union Miniere du Haut Katanga, low cost African copper producer, was willing to participate in further curtailment of production also bolstered sentiment. Friday the official export price on copper returned to its previous level of 6.62½c, c.i.f. European ports, from the low of 5.87½c reached earlier in the week. Brass and copper products continued on the basis of 6.25c for copper. Brass ingot was reduced ⅛-cent.

Lead—Quotations were cut an additional 25 points, bringing the St. Louis price down to 3.05c and the New York figure to 3.25c. These were the lowest prices in effect since 1896 and followed a period of dull demand. Sales were stimulated somewhat the later part of the week with corroders the chief takers.

Zinc—The metal touched a new record low of 2.75c, East St. Louis, Wednesday but recovered somewhat later. Buying continued slow.

Tin—Straits tin prices were generally higher last week but business was in small volume. Quotations remained under the usual costs of importers. The advance in sterling exchange aided the market. World visible supplies of tin increased considerably in February after declining in the preceding month. American deliveries were the lowest in months.

Antimony—The trend in antimony was easy, with quotations at the end of the week somewhat lower. The market remained inactive.

Aluminum—Sales continued in small volume, although prices showed no change.

Distillates Demand Is Exceeding Production

New York—Distributors of distillates in some instances are meeting a limited demand for toluol with difficulty due to long curtailment in output. While buying has not increased, current demand is slightly ahead of output. Practically all benzol and xylol goes directly into consumption. Prices are steady. Naphthalene contract shipments show a slight increase. Sulphate of ammonia buying drags at mixed prices.

Coke By-Products

Per Gallon, Producers' Plants, Tank Lots

	Spot
Pure benzol	$0.20
90 per cent benzol	0.20
Toluol	0.30
Solvent naphtha	0.26
Commercial xylol	0.26
Per Pound at Producers' Plants in 250-Pound Drums	
Phenol	0.16 to 0.17
Per Pound at Producers' Plants in	
Naphthalene flakes	3.75 to 4.75
Naphthalene balls	4.75 to 5.75
Per 100 Pounds Atlantic Seaboard	
Sulphate of ammonia	$1.10 to $1.20

Quicksilver Firmer

New York—Quicksilver prices are firmer here this week through recent curtailment of production. The prevailing price is $70 a virgin flask.

Prices of the Week, Cents a Pound

	Copper—Electro delivered	Copper—Lake delivered	Copper—Casting refinery	Straits Tin New York Spot	Straits Tin New York Futures	Lead N. Y.	Lead East St. L.	Zinc St. L.	Aluminum 98-99%	Spot Antimony	Ingot Nickel
February 27	6.00	6.37½	5.75	22.10	22.45	3.50	3.30	2.80	22.90	6.37½	35.00
February 29	5.75	6.37½	5.50	22.05	22.40	3.50	3.30	2.80	22.90	6.25	35.00
March 1	5.75	6.12½	5.50	21.90	22.50	3.25	3.05	2.80	22.90	6.25	35.00
March 2	5.75	6.12½	5.50	22.15	22.70	3.25	3.05	2.75	22.90	6.25	35.00
March 3	5.87½	6.12½	5.62½	22.35	22.90	3.25	3.05	2.80	22.90	6.25	35.00
March 4	6.00	6.12½	5.75	22.25	22.80	3.25	3.05	2.80	22.90	6.25	35.00

Here and There in Industry

ALLOY PRODUCTS CORP., 1556 South First street, Milwaukee, manufacturer of stainless steel vessels and similar products, will move its plant and offices about April 1 to Waukesha, Wis., where it will occupy the former plant of the Creamery Package Mfg. Co., now being remodeled for its use. Capital is being increased from $50,000 to $150,000 and financial interests of Waukesha have become interested. W. J. Wachowitz, who organized the company in 1924, is president, C. M. Schmitt vice president, W. A. Sherman secretary, and Earl S. Koehler treasurer.

□ □ □

Domestic Industries Inc., Mansfield, O., has appointed the Schimmel Electric Supply Co., 526 Arch street, Philadelphia, its distributor in eastern Pennsylvania, southern New Jersey and Delaware. S. Schimmel is president.

□ □ □

Diamond Electric Mfg. Co., Los Angeles, which recently took over the Mosher Mfg. Co., Denver, will establish a branch factory at Denver, in charge of D. G. Kendall, San Francisco, to supply the mountain area with electrical power switch and panel boards.

□ □ □

Rust Engineering Co., Pittsburgh, and associate company, the McCann Engineering Corp., are constructing a new sheet normalizing furnace for the Sharon Steel Hoop Co., Sharon, Pa. The furnace will be 108 inches wide and 83 feet long of the McCann walking beam type, fired by natural gas with automatic temperature control.

□ □ □

Watson-Stillman Co., Roselle, N. J., through a recent visit of its president, E. A. Stillman, to England, Germany and France, has taken American rights to the Henley straight through lead sheathing presses and made an agreement with Davy Bros., Sheffield, Eng., covering manufacture of Watson-Stillman equipment in England and the manufacture in the United States of certain of Davy Bros. hydraulic equipment.

□ □ □

Bucyrus-Erie Co., South Milwaukee, Wis., has taken a contract from the Great Lakes Dredge & Dock Co., Chicago, for a 120-foot steam dipper dredging unit. Contract for the steel hull has been sublet to the Manitowoc Ship Building Corp., Manitowoc, Wis., which has started work. Two Scotch marine boilers will also be built by the Manitowoc company and the remaining equipment will be built by the Bucyrus-Erie Co.

Personals

(*Concluded from Page* 24)

the Aluminum Co. of America, New Kensington, Pa., as research chemist and since May, 1929, editor of *Metal Cleaning and Finishing*, has been appointed advertising manager

Edward F. Berry

of the Udylite Process Co., Detroit, licensor of the Udylite process of applying protective coatings to prevent corrosion.

□ □ □

A. G. Beal, formerly New York and New England district sales manager for the Alan Wood Steel Co., Conshohocken, Pa., resigned, effective Feb. 29.

□ □ □

Greer McIlvain, Pittsburgh attorney and for several years a director of the National Fireproofing Corp., Pittsburgh, has been elected a vice president of the company.

□ □ □

Victor F. J. Tlach, president of Darwin & Milner Inc., Cleveland, American division of Darwins Ltd. Fitzwilliam Works, Sheffield, England, recently had conferred on him the rank of honorary consul general for Austria in the Ohio, Kentucky and Tennessee district.

□ □ □

G. Fred Sherman, formerly assistant sales manager of Tube-Turns Inc., Louisville, Ky., has been appointed manager of sales of the forged fittings division of Bonney Forge & Tool Works, Allentown, Pa.

Howard F. Grimes and Ben Bush were recently appointed to the sales staff of the forged fittings division of the company. Mr. Bush will have charge of selling in the New York and Pennsylvania district and Mr. Grimes in the Middle West.

□ □ □

C. H. Doolin, R. J. Brennan and H. V. Greenwood have been appointed new representatives for the Chicago territory of Foote Bros. Gear & Machine Co., Chicago.

□ □ □

Henry E. Eberhardt, one of the partners of Gould & Eberhardt, Newark, N. J., celebrated his 80th birthday on Feb. 14. He started working at 13, serving a five-year apprenticeship with Ezra Gould, with whom he later entered business.

□ □ □

J. S. Watson, vice president and general manager of the Indianapolis division of the Link-Belt Co., Chicago, has been elected a director of the Associated Employers of Indianapolis for three years to succeed George P. Torrence, recently transferred to Chicago. In a recent issue of STEEL it was inadvertently inferred that Mr. Watson had been elected a director of the Link-Belt Co.

Aggressive Selling Will Tap Large Steel Market

(*Concluded from Page* 21)

resenting private construction only, came up for bids and all but 21,000 tons have been placed. The Golden Gate bridge, involving many thousands of tons, is still in abeyance.

At Los Angeles, two large projects are under active contemplation, namely, a plant for Chrysler Corp. and a building for the *Los Angeles Times*.

There was little activity along steel lines in the Northwest, although conditions appear sound. He thought sentiment in the West and Middle West was much better than in the East. There were notable exceptions —Chicago, for instance, where the financial condition of the city is having a depressing influence, and in St. Louis, where more than 20,000 men are out of work. But generally speaking there was decidedly better feeling, particularly in view of prospects for more stable financial conditions.

In open hearth, soaking pit, annealing furnace
INSULATION HELPS QUALITY HEATING

HIGHER quality steel is produced only where heat is carefully controlled. That's why all builders of modern furnaces are using insulation. In the steel industry open hearths, soaking pits, annealing furnaces, and reheating furnaces operate more efficiently, give better temperature control when thoroughly insulated . . . in this way:

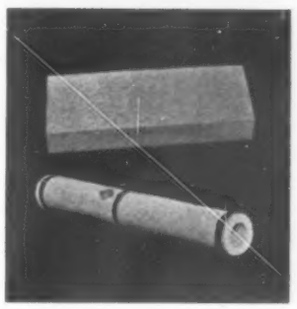
UP TO 2500° F.—*behind the refractory*

For slag pockets, fantails, regenerators, floors, doors, arches, and wherever the temperature is high, use *Armstrong's Insulating Brick*. Machine-sized on all faces, and burned at Cone 14, these brick will withstand temperatures up to and above 2500° F. without warping or fusing. They are light; their crushing strength is great; and they can be laid up dry.

UP TO 1600° F.—*behind the refractory*

In regenerator walls, high temperature flues, flues to preheater, and for gas mains, mixers, etc., use *Nonpareil Insulating Brick*. Like Armstrong's, these brick are machine-sized to an unusual degree of accuracy. They are adaptable to all firebrick constructions, and have high crushing strength. Nonpareil Insulating Brick, too, are often laid up dry, further increasing their high salvage value.

FROM 200° TO 1000° F.



Where construction lends itself to the use of insulating block, Nonpareil Block have all the necessary physical characteristics. They are strong and efficient. They are made in convenient sizes.

Nonpareil High Pressure Covering is ideal for high pressure and superheated steam lines. It is applied in one thickness. It is impervious to moisture and even withstands flood conditions without disintegration or loss of efficiency.

~ ~ ~ ~

Folders and bulletins giving complete information and technical data will gladly be sent on request. Samples, too, if desired. Prompt shipment from Beaver Falls, Pa. Armstrong Cork & Insulation Company, 920 Concord St., Lancaster, Pa.; Canadian offices in Montreal, Toronto, and Winnipeg.

Armstrong's (A) *Product*

Armstrong's & Nonpareil Insulating Brick
NONPAREIL HIGH PRESSURE COVERING AND BLOCK

Obituaries

JOHN T. HARRINGTON, 59, former president of the Trumbull Steel Co., Warren, O., now a part of Republic Steel Corp., Youngstown, O., died at Sydney, Australia, Feb. 28, on a world tour. He was born at Rock Creek, O., in 1873. In 1894 he was graduated from Oberlin college and in 1896 from the law school of the University of Michigan. After practicing in Ashtabula, O., courts for several years he moved to Youngstown, O., and in 1900 was legal counsel for the Mahoning and Shenango electric railways, then in the throes of the first of many subsequent power and light mergers. When death removed the senior members of his law firm Mr. Harrington reorganized it and became president of the local electric lines. When Jonathan Warner in the autumn of 1925 resigned as president of the Trumbull Steel Co. and Philip Wick had filled a four-month interim as president, Mr. Harrington was elected president of the Trumbull company on Dec. 16, 1925. This marked his initial entrance into the steel industry. At that time he was president of the Pennsylvania Power & Light Co. and a director of the Allied Power & Light Co. and the Pennsylvania-Ohio Edison Co. He was also a director of Republic Steel Corp., which absorbed the Trumbull company, until recently.

□ □ □

William J. Allen, 52, for 25 years the treasurer of the St. Louis Frog & Switch Co., St. Louis, died recently.

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Herman Kaeppel Sr., 67, for 45 years affiliated with the mechanical department of the Singer Mfg. Co., Elizabeth, N. J., died at Elizabeth, Feb. 27.

□ □ □

D. Mark Cummings, 66, Chicago capitalist and a director in the Morden Frog & Crossing Works, Chicago, died at Phoenix, Ariz., Feb. 29.

□ □ □

Charles Whittington, 62, for 38 years identified with the foundry division of Colorado Fuel & Iron Co., Denver and Pueblo, Colo., died Feb. 25 at Pueblo.

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F. L. Hutchinson, 65, noted electrical engineer and since 1912 national secretary of the American Institute of Electrical Engineers, died at New York, Feb. 26.

□ □ □

George M. Judd, secretary and a director of American Brake Shoe & Foundry Co., New York, died Feb. 29. He had been affiliated with the company more than 20 years.

□ □ □

Herman L. Winter, 62, president of the Box Crane & Hoist Corp., and the H. L. Winterer Machinery Co., both of Philadelphia, died at Germantown, Pa., Feb. 27. He was a director of the Kensington National bank and a member of the Engineers club.

□ □ □

William A. Banghart, 62, vice president and general manager, Rochester Coal & Coke Co., Rochester, N. Y., and sales engineer for the Ribstone Concrete Corp., Leroy, N. Y., died at Rochester, recently.

□ □ □

Morris Speer, 58, president of the Rotter-Speer Co., Cleveland, scrap dealer, died at Cleveland, March 1. He was the first president of the Cleveland-Detroit chapter of the Institute of Scrap Iron and Steel Inc., New York.

□ □ □

John J. Toole, 79, former superintendent of the Union Steel Casting Co., now the Blaw-Knox Co., Blawnox, Pa., died at Pittsburgh, Feb. 25. Mr. Toole was born in England in 1853 and went to Pittsburgh 19 years later, where he lived until his death. He started as foreman of the Pittsburgh Steel Foundry Co., Pittsburgh, and later became superintendent of the Union Steel Casting Co., which position he held for 28 years until his retirement ten years ago.

□ □ □

Peter H. Brodesser, 68, prominent Milwaukee inventor and manufacturer, died Feb. 26. He first became associated with the Bullock Machine Co., Chicago. After several years he went to Milwaukee and established the machine shop of Brodesser & Tornes, which developed into the Brodesser Elevator Co. Mr. Brodesser was known as the inventor of the automatic elevator stop. He also designed a coal conveyor and other mechanical devices.

□ □ □

John W. Ensign, 61, district manager in charge of the Huntington, W. Va., plant of American Car & Foundry Co., New York, died at Huntington Feb. 18. His father, Maj. Ely Ensign, was managing executive of the Ensign Mfg. Co., one of the major companies from which American Car & Foundry Co. was formed in 1899. After the consolidation Major Ensign became district manager at Huntington and upon his death was succeeded by his son. At one time a mayor of the city, John Ensign was an outstanding leader in Huntington's industrial, civic and religious life.

□ □ □

Augustus Smith, 7 5, president, Gergen Point Iron Works, Bayonne, N. J., died Feb. 29. A native of New York, he was a graduate of College of the City of New York and the Columbia University School of Mines. He was vice president of the New Jersey State Commission of Commerce and Navigation. Mr. Smith was a civil engineer and had made several inventions. He was a member of the various engineering societies and was an engineer for several large naval coaling stations, including that at Balboa, Panama Canal.

□ □ □

William G. Sharp, 40, formerly a vice president of the Hanna Furnace Co., Buffalo, now a division of National Steel Corp., Pittsburgh, died at Cleveland, March 1. Shortly after graduation from high school he became identified with the iron ore division of M. A. Hanna Co., Cleveland, and later was in the vessel division of the Cleveland-Cliffs Iron Co. and the Kinney Steamship Co. In March, 1920, he was appointed general manager of the Marting Iron & Steel Co., Ironton, O., and was also president of the Wellston Iron & Furnace Co. prior to joining the Hanna company.

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Burrows Sloan, 55, chairman, General Refractories Co., Philadelphia, died at Philadelphia, Feb. 28. In 1903 with W. R. Howell he started the railroad and mill supply house of Sloan, Howell & Co., Philadelphia, which became eastern representative for Harbison-Walker Co., Pittsburgh. After the death of Mr. Howell in 1909, Mr. Sloan continued the business and later changed the name to Burrows, Sloan & Co. In 1911 he terminated his connection with the Harbison company and became eastern representative for the General Refractories Co. When William R. Sproul, president, was elected governor of Pennsylvania in 1918, Mr. Sloan became vice president and assumed active charge of the company, including both sales and manufacturing. Mr. Sloan was a member of the American Iron and Steel institute and a director of the Lebanon Iron Co., Lebanon, Pa., and was active in other industrial organizations.

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Charles P. Wheeler, 75, a partner in Pickands, Mather & Co., Cleveland, and president of the former Pickands, Brown & Co., Chicago, died Feb. 28 at Pasadena, Calif. He had been identified with the merchant pig iron industry at Chicago for nearly 50 years. Mr. Wheeler received A. B. and A. M. degrees at Northwestern university, Evanston, Ill., and studied law at Columbia university, New York. He was associated with several coal companies, and later entered the pig iron, iron ore and coke business. He became a partner in Pickands, Brown & Co. in 1888, of which he was president for a number of years. When Pickands, Mather & Co. acquired Pickands, Brown & Co. early this year, Mr. Wheeler became a partner in the former. Two sons, Seymour and Leslie Wheeler, are associated with Pickands, Mather & Co., the former also being a partner. Another son, Elliot Wheeler, lives in Easton, Md. A trustee of Northwestern university for more than 20 years, Mr. Wheeler also had been president of the alumni association of that university.

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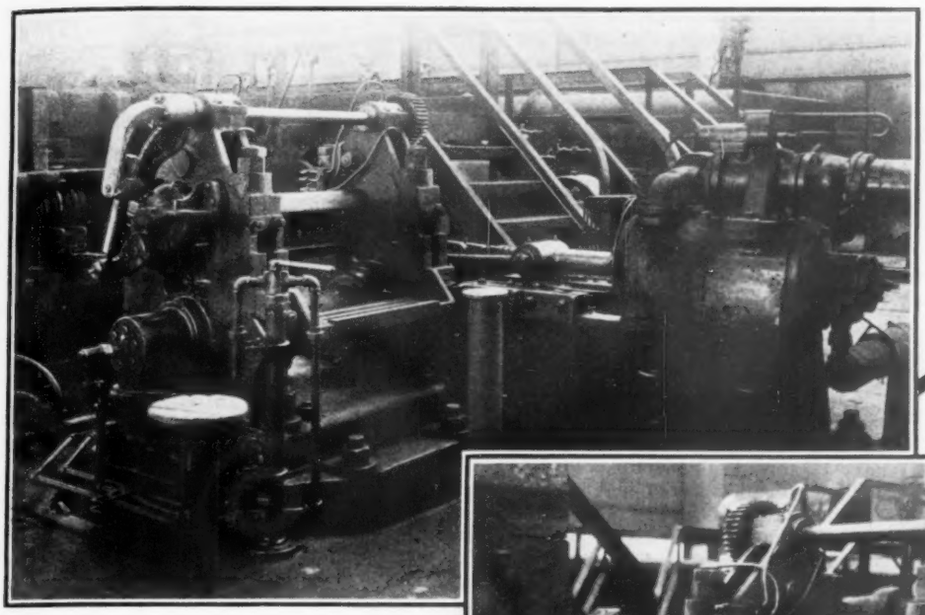

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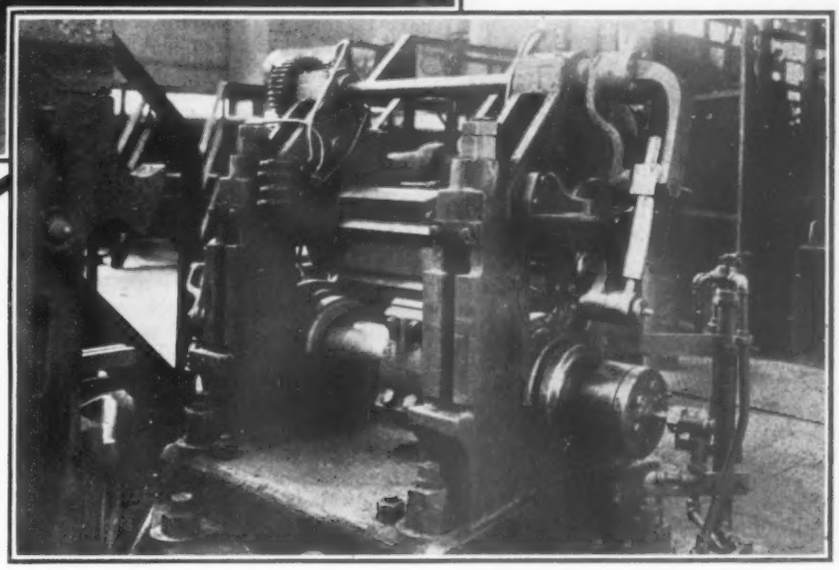

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Machinery

THROUGHOUT the industrial areas of the United States, machinery builders and dealers consider that only through an upswing in general business can there come about any substantial improvement in the industrial equipment market. Some are of the belief that within a short time the necessary impetus will be given by introduction of the new Ford cars. Others are more pessimistic and believe that the equipment business is destained to drag on at a low level until the depression eventually "burns itself out." Navy department continues to take a number of tools and further bids soon are to be opened. There is but little activity in used machinery.

New York—While no general improvement is noted in machine tool and other plant equipment sales, a few dealers report a slight pick-up. February business was slightly ahead of January, but the opinion still prevails that little real improvement will come until general manufacturing schedules show a substantial increase.

General Electric Co. has bought a few tools for the building of a new type of refrigerator on which production already is active. Other recent sales have been limited to one or two scattered tools. Government departments, notably the navy, are opening bids this week on a small list. This will be followed by a larger list on March 15.

Kingsbury Machine Works landed the navy contract for thrust bearings and spares for Portsmouth, with a bid of $10,055. Bids on this were opening late in January. Contract for a toolmaker's precision lathe and gears for Brooklyn has been awarded to Pratt & Whitney Co.

Worcester, Mass.—Launching by Ford Motor Co. of actual production on its new 4- and 8-cylinder models, following several months of uncertainty as to plans, already has aroused some machinery activity as far as Worcester builders are concerned. A new inquiry has been received from the Ford company, supplementary to orders for grinders booked several weeks ago, and presages early action.

A textile manufacturer in the South has taken a 20-inch lathe and two drum lathes for garage service. Navy department is opening schedules on two lathes to be installed on shipboard, delivery at Philadelphia.

General business conditions continue to be spotty in this territory and the best possibilities still are considered to lie in the automotive industry.

Pittsburgh—Small miscellaneous items still constitute practically all of the activity in the machine tool market in this district. The larger users are placing few awards or inquiries. Westinghouse Electric & Mfg. Co. has done practically no buying for its local plant, although it has been slightly more active at the Mansfield, O., works.

Outlook for purchases by railroads is regarded as slightly more favorable but little hope is entertained for any early upturn in their tool purchases. Pennsylvania railroad still is delaying action on replacement of tools at its Altoona, Pa., shops which were damaged by fire a short time ago. No inquiries of consequence are appearing from steel companies and awards are correspondingly light.

Cleveland—Some machinery dealers report an increase in amount of inquiry, this being true particularly of those who are offering equipment having improved production possibilities. Neither dealers nor builders, however, report anything in the way of orders other than scattered single items. Detroit automobile builders still hold the center of the stage as prospects.

At the auction of excess machine tools and other plant equipment held March 1 and 2 by Hupp Motor Car Co., bids were so few and so low that the sale on one of the two days was called off by the auctioneer.

Several theories have been advanced to account for that situation. One is that few of the prospects had sufficient cash. Another is that warehouses of dealers in used machinery already are filled to overflowing.

The most interesting theory, however, is that recent improvements in production machinery have been so marked that used machinery, even that of comparatively recent vintage, in many cases has been rendered definitely obsolete and therefore has lost its ordinary market value.

Chicago—Fresh developments are slow to appear in the machine tool market. An industrial buyer in this district has a list out for estimating purposes only. This would amount to $30,000 to $35,000, but the list merely was submitted by the shop and production departments with no assurance that purchase is to be made for some time.

A shade more activity is noted in the Milwaukee district. A manufacturer there placed an order for sheet metal equipment while a few production tools were ordered. The Chicago district steel producer who has had an inquiry out for some months, does not plan to close soon.

While Studebaker Corp., South Bend, Ind., is having a few special tools rebuilt, no rebuilding or production equipment is scheduled. Few strictly modern tools are being sold in current auctions.

Exports of Metal Working Machinery

	January		Six Months Ending December	
	1932	1931	1931	1930
Engine lathes	7	47	166	332
Turret lathes	5	26	52	124
Other lathes	17	47	300	211
Vertical boring mills and chucking machines	6	16	66	174
Thread-cutting and automatic screw machines	11	17	132	237
Knee and colum type milling machines		8	59	115
Other milling machines	5	30	198	229
Gear-cutting machines	5	12	133	136
Vertical drilling machines	7	15	89	123
Radial drilling machines	1	11	19	34
Other drilling machines	13	70	529	489
Planers and shapers	12	36	142	82
Surface grinding machines	15	9	69	31
External cylindrical grinding machines	5	13	202	159
Internal grinding machines	9	11	80	72
Tool grinding, cutter grinding, and universal grinding machines	26	97	314	602
Pneumatic portable tools	355	885	4,382	7,972
Chucks for machine tools	191	459	4,155	5,445

Construction and Enterprise

CONCISE, TIMELY BUSINESS BUILDING OPPORTUNITIES IN FIELD OF INDUSTRY

New England

ATHOL, MASS.—D. & W. Spdinkler Mfg. Co. has been organized to manufacture sprinkler and fire protection devices. A. H. Starrett of L. S. Starrett Tool Co., is president and M. Kessler, superintendent of the Athol Machine Co. is secretary.

WORCESTER, MASS.—Oil Burner Products Co. Inc. has been organized by George O. Brumm, 9 May street, and associates, to manufacture oil burners and similar devices.

WORCESTER, MASS.—Reed & Prince Mfg. Co., Duncan avenue, manufacturer of screws, will build a plant at Cambridge street, costing $100,000. E. F. Sill, East Main street, Westboro, Mass., is engineer.

New York

BUFFALO—Irving Air Chute Co., Pearl street, has had plans made for a plant to cost $100,000, at 1668 Jefferson street, on which construction is to be started immediately.

LONG ISLAND CITY—Royal Aluminum Corp. has been organized with $100,000 capital to manufacture aluminum domestic appliances, by Irving J. Henry, 81 Chelsea road, and A. H. Alderton, 29 Brompton road, both of Garden City, L. I., N. Y.

MOUNT VERNON—Mount Vernon Welding & Machine Co. has been incorporated with $20,000 capital by B. Fischler, 401 Broadway, New York.

NEW YORK—Birghall Bros. has been incorporated with $5000 capital to operate a machine shop, by M. Green, 152 West Forty-second street, New York.

NEW YORK—Metal Hardening Corp. has been incorporated with 120 shares no par value, by J. Greenspan, 67 West Forty-fourth street.

NEW YORK—Montclair Steel & Wire Corp. has been incorporated with 300 shares no par value by Hayes & Uihlein, 25 West Forty-third street.

ROCHESTER—Rochester Metallurgical Corp. has been incorporated with 100 shares no par value to refine metals, by Hubbel, Taylor, Goodwin, Nixon & Hargrave, Rochester.

New Jersey

CAMDEN—James B. Phillips Inc. has been incorporated with 1000 shares no par value to do bridge and structural steel work, by Patrick H. Harding, 521 Cooper street, Camden, N. J.

GUTTENBERG—Poellot Sheet Metal Works Inc. has been incorporated with $25,000 capital to manufacture sheet metal products, by Vanderbach & Vanderbach, Guttenberg, N. J.

NEWARK—Sonolux Co. and Sonolux Laboratories have been incorporated to manufacture electric fixtures and electric supplies, with 2500 shares no par value for each, by Kessler & Kessler, Newark.

Pennsylvania

LANCASTER—L. O. Bear Tool Co. has suffered severe damage to its plant, by fire, estimated at $20,000.

Ohio

CINCINNATI — Tristate Tinning & Galvanizing Co. has been organized to operate a galvanizing and tinning plant and manufacture metal specialties, by H. H. Sunderman, 601 First National Bank building, and associates.

MARIETTA—Plants of the American Supply Co. and Pattin Bros. Co., manufacturers of oil well supplies, suffered severe loss from fire recently, several buildings of each being destroyed. Rebuilding will be undertaken.

ULRICHSVILLE—City, J. W. Lytle, mayor, is planning financing for a municipal power plant.

Michigan

DETROIT—Modell Iron & Metal Co. has been incorporated with $70,000 capital to deal in ferrous and nonferrous metals, by Harry P. Stone, 6378 Marcus avenue, Detroit.

DETROIT—Welding Machines Mfg. Co. has been incorporated with $10,000 capital to manufacture welding appliances and machines, by Harry V. Beronius, Detroit. Plant at 17325 Labont avenue, Detroit.

FLINT—Headlight Development Co. has been incorporated with $2000 capital to manufacture automobile headlights and parts, by Walter G. Krapohl, 505 Dryden building, Flint, Mich.

Indiana

SOUTH BEND—Millwright & Welding Service Inc. has been incorporated with 1000 shares no par value to conduct a general business of millwork, welding and general structural sheet metal fabrication, by Ralph Zellers, Joseph Sullivan and associates.

Illinois

CHICAGO—A. J. Kallsheur Co., 2135 North Cicero avenue, has been incorporated with $3000 capital to manufacture brass rollers and die castings, by Muller Bros. Art & Mfg. Co., 2641 West Polk street.

CHICAGO — Illinois Bell Telephone Co., 212 West Washington street, has awarded contract to Lundoff Bicknell Co., 100 North LaSalle street, for 4-story building, 114 x 123 feet, at 1338 West Monroe street, to cost $225,000.

CHICAGO—Chicago Union Station Co., Union Station building, will build a 7-story brick power house, 94 x 116 feet, at 301 West Taylor street, to cost $295,000. Graham, Anderson, Probst & White, 80 East Jackson boulevard, are architects.

SPRINGFIELD — Automatic Transmissions Inc., 1500 South Eighth street, has been incorporated with 5000 shares no par value to manufacture transmissions and other mechanical devices, by Howard C. Knotts and associates, of Springfield.

Southern States

WASHINGTON—Bids will be opened March 15 by the bureau of supplies and accounts, navy department, on schedule 7581 for a motor-driven sliding head drilling machine for Mare Island navy yard.

LUDLOW, KY. — Bids will close March 10 on a waterworks system estimated to cost $120,000. Charles White, 308 Elm street, is city clerk. Includes two deep wells, two pumps, 1,500,000-gallon reservoir and two high-pressure pumps. Fosdick & Hilmer, Union Trust building, Cincinnati, are consulting mechanical engineers.

Wisconsin

CEDAR GROVE—Bids are being taken by the village board until March 11 for construction of a waterworks and sewerage system. Equipment includes a 350-gallon deep well turbine and a 350-gallon general service pump and motor, 500-gallon pump with 6-cylinder engine drive and full automatic control and 60,000-gallon elevated steel tank and tower 120 feet high. L. J. Meylink is village clerk.

PALMYRA—Palmyra Mfg. Co., recently organized, is equipping a plant for the manufacture of power-driven hack saws and other mechanical specialties. W. E. Erni, formerly of Fort Atkinson, Wis., is general superintendent. (Noted Feb. 29).

Iowa

WATERLOO—Schiotz Tool, Gear & Machine Works, Otto A. Schiotz president, 221 Sixth street, is remodeling a

newly-acquired building into machine shop.

Pacific Coast

LOS ANGELES — Wood Hydraulic Hoist & Body Co., 1210 Mateo street, will build a 1-story plant, 200 x 230 feet, at Santa Fe and Twentieth streets, to cost about $45,000.

ELLENSBURG, WASH.—Bids will be opened March 30 by the United States reclamation bureau for construction of the Wippel pumping plant and lateral station. Materials, which will be furnished by the government include 28.5 tons of reinforcing bars, 7300 pounds of gates and a small tonnage of structural shapes.

KITTITAS, WASH.—A bond issue of $30,000 has been approved by voters for construction of a municipal water system with all pipe of metal.

SEATTLE—Northwest Steel Rolling Mills suffered some loss by fire in its warehouse at Eleventh avenue and Forty-fifth street.

Dominion of Canada

NELSON, B. C.—Installation of a new transmission line from Bonnington to this city and a new battery of transformers has been recommended by W. D. Flett, city electrical engineer.

PRINCE GEORGE, B. C.—Nash Engineering Works Ltd. has started work on the erection of a foundry on Atlin avenue, one story, 25 x 50 feet.

VANCOUVER, B. C.—Vulcan Engineering Works will rebuild its machine shop on Grenville island, recently destroyed by fire.

GLACE BAY, N. S.—Dominion Steel & Coal Co. will rebuild its transformer building, recently damaged by fire.

TORONTO, ONT. — Spring Service Ltd. has been incorporated with $10,000 capital and 3000 shares no par value to operate a brass and iron foundry, by Emerson T. Coatesworth, Toronto, Ont.

WINDSOR, ONT.—Wel-Ever Piston Ring Co., Toledo, O., Alfred P. Fall president, will establish a branch plant here to supply the Canadian market.

DRUMMONDVILLE, QUE.—Southern Canada Power Co. Ltd., 355 St. James street west, J. R. Desloover engineer, plans to start work this year on a hydro-electric power plant a few miles below here.

MONTREAL, QUE.—L. E. Waterman Co. Ltd., 261 St. James street West, plans erection of a plant at St. Lambert for the manufacture of fountain pens, pencils and similar devices.

THREE RIVERS, QUE.—Canadian Iron Foundries Ltd. plans to build a plant here for the manufacture of cast iron water pipe and valves.

New Trade Publications

MOTORS—Wagner Electric Corp., St. Louis, 6400 Plymouth avenue, has a looseleaf bulletin page on polyphase squirrel-cage motors. It is Bulletin 167, part 7.

RUST RESISTANCE—Skybryte Co., 1919 East Nineteenth street, Cleveland, in a current bulletin sets forth claims for its rust-resistant application for steel and iron, as an aid in reducing maintenance costs in industry.

CHAIN—Carroll Chain Co., Columbus, O., has distributed a circular on its welded chain and allied products. Enclosed is an interesting chart of the sequence of good and bad business periods and panics.

UNIT HEATERS—Skinner Heating & Ventilating Co., division of the St. Louis Blow Pipe & Heater Co. Inc., 1948 North Ninth street, St. Louis, is distributing a catalog covering data on its line of unit heaters.

ALUMINUM BUS BARS—Aluminum Co. of America, Pittsburgh, in a current bulletin, discusses the use of channel forms in aluminum as efficient conductors of heavy electrical currents. Many illustrations indicate methods of application and tables give data on efficiency.

CHEMISTRY—"The Consulting Chemist and Your Business" is the title of a booklet issued by Foster D. Snell Inc., 130 Clinton street, Brooklyn, N. Y., consulting chemist and engineer. It outlines the nature of the services rendered by the company.

DROP FORGINGS—J. H. Williams & Co., 75 Spring street, New York, is distributing the twenty-first edition of its catalog of drop forgings and drop forged tools. Illustrations and data tables supplement the usual catalog matter.

ELECTRICAL EQUIPMENT — General Electric Co., Schenectady, N. Y., has published Bulletin 885B on its super synchronous motor in two and three-phase; 1262B on its thrustors; 1372A on its electric steam generators. Each is illustrated and gives full descriptions.

ROLLER CHAIN—Chain Belt Co., Milwaukee, has issued Catalog No. 440 on its line of roller chain and sprockets. It also is a data book containing prices, weights and information on the design and application of various types of chains and appropriate sprockets.

TRAMRAIL—Cleveland Electric Tramrail division of Cleveland Crane & Engineering Co., Wickliffe, O., in a current bulletin indicates how its tramrail equipment can give better warehousing, proper order selection and straight-line production.

VANADIUM ALLOYS — Vanadium Corp. of America, 120 Broadway, New York, through its research department, has issued the first quarterly review for 1932. It covers a resume of current literature on vanadium, its alloys and compounds.

CHROME BRICK—A folder has been issued by E. J. Lavino & Co., Bullitt building, Philadelphia, Bulletin 1-13-15-A, on its new process chrome brick, with results of tests in comparison with brick made by the usual process. Halftones show effects of various temperature tests.

PERCHLORIC ACID—Uses of perchloric acid as a research and routine analytical chemical reagent is treated in a monograph published by the G. Frederick Smith Chemical Co., 867 McKinley avenue, Columbus, O. Considerable space is given to its use in metallurgical analysis.

ROLLER BEARINGS—Tyson Roller Bearing Corp., Massillon, O., has published the second edition of an engineering manual, available to production, operating and design executives, engineers and superintendents. It contains essential information on application of cageless tapered roller bearings for all anti-friction purposes.

BOILERS—Babcock & Wilcox Co., 85 Liberty street, New York, in Bulletin G-8 goes into detail in describing its type H Stirling boiler, a small water-tube boiler to provide power and process steam at relatively low pressures. Illustrations cover various parts and diagrams show assembly of actual installations. Ample data are included.

STAMPINGS — Geometric Stamping Co., Cleveland, has compiled a reference book of the stamping industry to aid machine designing engineers to incorporate into their specifications the definite facts and figures necessary. It is illustrated with charts, graphs and tables. Requests on firm stationery, mentioning STEEL, will bring a copy.

ENGINEERING ACHIEVEMENTS—In reprint 471 Westinghouse Electric & Mfg. Co., Pittsburgh, presents a resume of some of the things it accomplished in 1931. It includes water power, steam generating plants, transformers and converters, transmission and lighting, switchgear, transportation, industry, illumination, radio and research.

ELECTRIC FURNACES—Ajax Electrothermic Corp., division of the Ajax Metal Co., Ajax Park, Trenton, N. J., has issued its technical bulletin No. 7 on oscillator or spark-gap type converters and furnaces. The text includes general information on the principle employed in the construction of the furnaces, its advantages and field of use. Detailed technical information on each type of furnace is presented in text, illustration by drawings and a discussion of refractories and methods of lining.